CONTRACT

SPECIAL PROVISIONS

Project No.:	**SP-15-7(170)320**
Name:	**I-15 NB OFF RAMP AT PARRISH LANE**
	SPOT IMPROVEMENT PROJECT
County:	**DAVIS**
Bid Opening:	**JUNE 17, 2003**
	Date

2002 - U.S. Standard Units (Inch-Pound Units) March 27, 2003

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I. 2002 Standard Specifications

The State of Utah Standard Specifications for Road and Bridge Construction, U.S. Standard Units (Inch Pound Units) CSI Format, Edition of 2002 with Changes One and Two included applies on this project as a static Specification Book.

Refer to Part II (List of Revised Standard Specifications) and Part XI (Special Provisions) for other project specific specifications.

II. List of Revised Standard Specifications

Change One – Included in 2002 Standard Specifications

Revised August 29, 2002

Section 00570 Articles 1.2 A 69, A 71 b (deleted)
Section 00727 Articles 1.1 D; 1.5 B; 1.9; 1.10; 1.16 B, C; 1.18 B
Section 01574 Articles 1.2 B
Section 02721 Articles 1.2 D (added), H (replaced), I (deleted);1.6 B1; 2.1 A Table 3; 3.2 C
Section 02741 Articles 3.8 E 2 a, b
Section 02821 Articles 3.1 A
Section 02892 Articles 1.5 A, B
Section 02936 Articles 1.4; 1.5 C
Section 03152 Articles 1.2 P, Q; 2.2 A, B
Section 05120 Articles 1.4 A (deleted), 3.3 A
Section 16525 Articles 1.6 A, B

Change Two – Included in 2002 Standard Specifications

Revised December 19, 2002

Section 01561 Article 3.1 A
Section 02075 Article 2.7 A
Section 02372 Article 2.1 A 4
Section 02455 Article 3.3 B 2
Section 02785 Article 3.2 C
Section 02861 Article 3.3 A
Section 03055 Articles 1.2 P (inserted), 2.3 B, 2.4 (deleted), 2.7 A 1 a-e (added), 2.7 B 2 (added), 2.8 A 1 a, 2.8 A 2 (deleted), 2.9 A3, 3.2 A Table, 3.2 C, 3.7 A 3, 3.8 C 1, 3.9 A-B, 3.10, 3.11 B 1, 3.11 B 3
Section 07922 Article 2.1 Table 1

Change Three

Revised February 27, 2003

Section 01355 Article 1.3 A 3
Section 01721 1.4 C deleted and moved to Measurement and Payment document
Section 02222 Changed title from Site Demolition-Pavement to Site Demolition - Concrete, A, 3.2 Title, 3.2 A
Section 02224 New Specification
Section 02316 1.2 A, D, I added, 1.3 added, 1.7 B, C, D, E, F, G added, 3.9 A added
Section 02455 3.3 B 2 (corrected error from change two)
Section 02721 1.2 Related Sections added, 1.3 H and I added, 1.7 B, 1.7 F deleted, 2.1 B added, 2.2 deleted, 3.1 Title changed, 3.2 B reference added, 3.2 E added
Section 02741 1.4 C6a added, 1.4 H, Table 3, 2.4 A, 2.4 C, Table 9, 2.5 B 1-3, 2.5 B 4 added, 2.5 D, 3.1 Al deleted, 3.2 C3 added, 3.7 D1, 3.9 B4, 3.9 B5 added, 3.9 E note added
Section 02744 Entire Section deleted
Section 02745 1.4 A9
Section 02785 1.2 C and D added
Section 02892 Added Articles, 1.3 N, O, Y, 1.5 D, 2.4 I, 2.5 C, D, E, 2.6 B3 - B6, 2.6 C, 2.16, 2.17, 3.11 and Revised Articles 3.5 F and Table Number, 3.5 G and Table Number
Section 02896 2.1 A, B and 3.1 A drawing number corrected
Section 16525 1.2 H

III. List of Revised Standard Drawings

Change One

Revised December 19, 2002

AT 7	Polymer Concrete Junction Box Details	12/19/2002
BA 1A	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 1B	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 3	Cast In Place Constant Slope Barrier	12/19/2002
BA 4B	Beam Guardrail Installations	12/19/2002
BA 4C	Beam Guardrail Anchor Type I	12/19/2002
CC 6	Crash Cushion Type E Sand Barrel Details	12/19/2002
DG 3	Maximum Fill Height and End Sections for HDPE And PVC Pipes	12/19/2002
DG 4	Pipe Culverts Minimum Cover	12/19/2002
EN 4	Temporary Erosion Control (Drop-Inlet Barriers)	12/19/2002
GW 1	Raised Median and Plowable End Section	12/19/2002
PV 2	Pavement Approach Slab Details	12/19/2002
SL 13	Traffic Counting Loop Detector Details	12/19/2002
SN 2	Flashing School Sign	12/19/2002
SN 4	Flashing Stop Sign	12/19/2002
SN 5	Typical Installation For Milepost Signs	12/19/2002
SN 8	Ground Mounted Timber Sign Post (P1)	12/19/2002
ST 1	Object Marker “T” Intersection and Pavement Transition Guidance	12/19/2002
ST 7	Pavement Markings and Signs at Railroad Crossings	12/19/2002
SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/2002
SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/2002
SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/2002

Change Two

Revised February 27, 2003

GW 2	Concrete Curb and Gutter	02/27/2003
GW 5	Pedestrian Access	02/27/2003

IV. Materials Minimum Sampling and Testing

Follow the requirements of the Current Materials Minimum Sampling and Testing Manual:

Materials Minimum Sampling and Testing Manual reference can be found from the UDOT Web Site at:
http://www.dot.utah.gov/esd/Manuals/Materials/MaterialsSampling.htm

For UDOT employees the Manual can also be found on the Shared Drive at:
\Shared\Engineering Services\Manuals\Materials (W drive for the Complex and R drive for the Regions)

State-Red Book with Full Size Plan Sheets

V. Notice to Contractors

NOTICE TO CONTRACTORS

Sealed proposals will be received by the Utah Department of Transportation UDOT/DPS Building (4th Floor), 4501 South 2700 West, Salt Lake City, Utah. 84114-8220, until 2 o'clock p.m. Tuesday, June 17, 2003, and at that time the download process of bids from the USERTrust Vault to UDOT will begin, with the public opening of bids scheduled at 2:30 for SPOT IMPROVEMENT PROJECT of I-15 NB OFF RAMP AT PARRISH LANE in DAVIS County, the same being identified as State Project No: SP-15-7(170)320.

Federal Regulations:
Wage Rate Non-Applicable.

Project Location: 0.154 Miles of Route: 0015 from R.P. 319.630 to R.P. 319.784

The principal items of work are as follows (for all items of work see attachment):
Ramp Meter Signals and Signing System
Traffic Control
MSE Block Retaining Wall (Est. exposed surface area = 690 sq ft)

The project is to be completed: in 50 Working Days.

Other Requirements:
All project bidding information, including Specifications and Plans, can be viewed, downloaded, and printed from UDOT's Project Development Construction Bid Opening Information website, http://www.dot.utah.gov/cns/bidopeninfo.htm. To bid on UDOT projects, bidders must use UDOT's Electronic Bid System (EBS). The EBS software and EBS training schedules are also available on this website.

Project information can also be reviewed at the main office in Salt Lake City, its Region offices, and its District offices in Price, Richfield, and Cedar City.

Project Plans cannot be downloaded or printed from the website unless your company is registered with UDOT. Go to UDOT's website to register. Unregistered companies may obtain the Specifications and Plans from the main office, 4501 South 2700 West, Salt Lake City, (801) 965-4346, for a fee of $20.00, plus tax and mail charge, if applicable, none of which will be refunded.

As required, a contractor's license must be obtained from the Utah Department of Commerce.

Each bidder must submit a bid bond from an approved surety company on forms provided by the Department; or in lieu thereof, cash, certified check, or cashier's check for not less than 5% of the total amount of the bid, made payable to the Utah Department of Transportation, showing evidence of good faith and a guarantee that if awarded the contract, the bidder will execute the contract and furnish the contract bonds as required.

The right to reject any or all bids is reserved.

If you need an accommodation under the Americans with Disabilities Act, contact the Construction Division at (801) 965-4346. Please allow three working days.

Additional information may be secured at the office of the Utah Department of Transportation, (801) 965-4346.

Dated this 24th day of May, 2003.

UTAH DEPARTMENT OF TRANSPORTATION
John R. Njord, Director

Revised Date:

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VI. EQUAL OPPORTUNITY (STATE PROJECTS)

Selection of Labor:

During the performance of this contract, the Contractor shall not discriminate against labor from any other State, possession, or territory of the United States.

Employment Practices:

During the performance of this contract, the Contractor agrees as follows:

The Contractor will not discriminate against any employee or applicant for employment because of race, religion, sex, color, national origin, age, or disability. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, sex, color, national origin, age, or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provide by the State Highway Department setting forth the provisions of this nondiscrimination clause.

The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, sex, color, national origin, age, or disability.

The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State Highway Department advising the said labor union or worker' representative of the Contractors commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further State contracts.

The Contractor will include the provisions of this Section in every subcontract or purchase order so that such provision will be binding upon each Subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the State Highway Department may direct as a means of enforcing such provisions including sanctions for noncompliance.

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VII. Bidding Schedule

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 6/17/2003
Project Number: SP-15-7(170)320
Project Name: I-15 NB OFF RAMP AT PARRISH LANE
Description: SPOT IMPROVEMENT PROJECT
Funding STATE

Region: REGION 2
County DAVIS

#	Item	Description	Quantity	Unit
10 - ROADWAY				
1	012850010	Mobilization	1	lump sum
2	013150010	Public Information Services	1	lump sum
3	015540005	Traffic Control	1	lump sum
4	01557001*	Maintenance of Traffic	1	lump sum
5	015720020	Dust Control and Watering	50	1000 gallons
6	020560020	Granular Borrow	1268	ton
7	02221007*	Remove Delineator	4	each
8	022210075	Remove Guardrail	367	foot
9	02222000*	Remove Plowable end Section	2	each
10	022220020	Remove Concrete Curb and Gutter	176	foot
11	02224001P	Disposal of Asphalt Material (Est. Quantity 516 Sq. Yd.)	1	lump sum
12	023160020	Roadway Excavation (Plan Quantity)	988	cubic yard
13	023760010	Erosion Control Blanket	278	square yard
14	027210070	Untreated Base Course 3/4 inch or 1 inch Max	475	ton
15	027410060	HMA - 3/4 inch	434	ton
16	027480010	Liquid Asphalt MC-70 or MC-250	1	ton
17	027480040	Emulsified Asphalt CSS-1	1	ton
18	027650020	Pavement Message Paint	189	each
19	027650030	Remove Pavement Markings	2780	foot
20	027650040	Remove Pavement Markings	56	each
21	027650060	Pavement Marking Paint	4301	foot
22	027710020	Concrete Curb Type M2	522	foot
23	027710035	Concrete Curb and Gutter Type M1	170	foot
24	027710100	Plowable End Section	3	each
25	027760020	Concrete Median Filler	202	square foot
26	027860010	Open Graded Surface Course	65	ton
27	027860050	Asphalt Cement PG 64-28	4	ton
28	028210014	4 ft Chain Link Fence, Type II	143	foot
29	028410010	Beam Guardrail	800	foot
30	028430035	Crash Cushion Type G	2	each
31	028910005	Remove Sign	7	each
32	028910010	Relocation of Sign	8	each
33	028910075	Auxiliary Sign Type A-2	10	square foot
34	02891008P	Sign Type A-2, 12 inch X 36 inch	3	each
35	028910115	Sign Type A-2, 30 inch X 30 inch	2	each
36	028910120	Sign Type A-2, 36 inch X 36 inch	1	each
37	029120010	Contractor Furnished Topsoil	384	square yard
38	029220040	Broadcast Seed	3	1000 square fee
20 - STRUCTURES				
	Description: MSE Block Retaining Wall R-422			
39	02831000*	MSE Block Retaining Wall (Est. exposed surface area = 690 sq ft)	1	lump sum

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Measurement and payment. Read all related documents carefully.

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 6/17/2003
Project Number: SP-15-7(170)320
Project Name: I-15 NB OFF RAMP AT PARRISH LANE
Description: SPOT IMPROVEMENT PROJECT
Funding STATE

Region: REGION 2
County DAVIS

#	Item	Description	Quantity	Unit
50 - SIGNALS				
40	02892001D	Traffic Signal System I-15 NB Ramp & Parrish Lane	1	lump sum
41	02892002D	Traffic Signal System I-15 SB Ramp & Parrish Lane	1	lump sum
42	02892003D	Temporary Traffic Signal System	1	lump sum
70 - ATMS				
43	135520010	Ramp Meter Signals and Signing System	1	lump sum

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Measurement and payment. Read all related documents carefully.

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VIII. Measurement and Payment

MEASUREMENT AND PAYMENT

SP-15-7(170)320
I-15 NB Off ramp at Parrish Lane

The Department will measure and pay for each bid item as detailed in this section. Payment is contingent upon acceptance by the Department.

Items are listed by Specification and in tables as follows:

Item #	Bid item number	Bid Item Name	Unit of measurement and payment
Additional information goes here.			

1	**012850010**	**Mobilization**	**Lump sum**
	Payment	**Amount Paid**	**When Paid**
	First	The lesser of 25% of Mobilization or 2.5% of contract	With first estimate
	Second	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 5% of contract
	Third	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 10% of contract
	Fourth	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 20% of contract
	Final	Amount bid in excess of 10% of contract price.	Project Acceptance-Final

2	**013150010**	**Public Information Services**	**Lump Sum**
	Payment	**Amount Paid**	**When Paid**
	One	25% of bid item amount	With first estimate
		Remaining portion of bid item paid as a percentage of the contract completed	With each estimate

3	**015540005**	**Traffic Control**	**Lump Sum**
	Payment	**Amount Paid**	**When Paid**
	One	25% of the bid item amount	With first estimate
		Remaining portion of bid item paid as a percentage of the contract completed	With each estimate

4	**01557001***	**Maintenance of Traffic (MOT)**	**Lump Sum**

A. Partial Payments - Based on the percentage of the project completed, excluding the cost of MOT.

1. Failure to comply with any of the requirements of this special provision will result in non-compliance.

B. Price Adjustments:

1. The Department reduces payment if the MOT implemented is not in compliance with the approved MOT plan, as determined by the Engineer.

2. The amount per day by which the Contractor's compensation will be reduced is calculated using the daily charge in the Schedule of Liquidated Damages in Table 1 of Section 00555 or the Contract lump sum bid price for MOT divided by the number of Contract days, whichever is greater.

C. Payment for change in scope: Negotiate a price adjustment for MOT if the Engineer orders a change in the scope of work which requires modification to the approved MOT

D. Variable Message Sign:

1. Unless directed by the Engineer, display advance notification messages (VMS) at the designated locations for 7 days prior to beginning work and continue for 7 days after beginning work.
2. Make two VMS signs available at all times during the project to be used as directed by the Engineer at no additional cost to the Department.

5	**015720020**	**Dust Control and Watering**	**1000 Gallon**

6	**020560020**	**Granular Borrow**	**Ton**
Refer to Section 01280 “Measurement”			

7	**02221007***	**Remove Delineator**	**Each**
Removed			

8	**022210075**	**Remove Guardrail**	**Feet**
Including end section and anchorages			

9	**02222000***	**Remove Plowable End Section**	**Each**
Removed			

10	**022220020**	**Remove Concrete Curb and Gutter**	**Feet**

11	**02224001P**	**Disposal of Asphalt Material (Est. Quantity 516 Sq Yd)**	**Lump**

12	**023160020**	**Roadway Excavation (Plan Quantity)**	**Cubic yard**

13	**023760010**	**Erosion Control Blanket**	**Square yard**
In place, do not measure overlaps			

14	**027210070**	**Untreated Base Course 3/4 inch or 1 inch Max**	**Ton**
In place			

15	**027410060**	**HMA - 3/4 inch**	**Ton**
Includes aggregates, asphalt binder, hydrated lime, other additives, etc. The Department will not pay separately for asphalt binder, hydrated lime, additives, etc.			

16	**027480010**	**Liquid Asphalt MC-70 or MC-250**	**Ton**
Do not measure water added in excess of the specified amount in Standard Specification 02745.			

17	**027480040**	**Emulsified Asphalt CSS-1**	**Ton**
Do not measure water added in excess of the specified amount in Standard Specification 02745.			

18	027650020	Pavement Message Paint	Each

In place, measurement - Painted Pavement Messages:

A. Letter = one message.
B. Arrow = one message.
C. Multi-headed arrow = one message per arrow.
D. School crossbars = one message per 24 inch x 10 ft bar.
E. Crosswalk = two message per lane and two messages per shoulder.
F. Stop Bar = one message per lane and one message per shoulder.
G. Railroad crossing markings = seven messages per lane.
   1. "R" = one message each (two required).
   2. "X" = two messages.
   3. Transverse Bar = one message each (two required).
   4. Stop Bar = one message.

Payment:

A. The Department will not pay for removal of unauthorized, smeared, or damaged markings.
B. Price reduction for paint application rate:

Rate	Pay Factor
At the specified rate	1.0
1-10 percent below the specified rate	0.75
11-15 percent below the specified rate	0.50
More than 15 percent below the specified rate	May be accepted at 0.40 or required to be repainted.

19	027650030	Remove Pavement Markings	Feet

Measurement for removing pavement markings:
Measure per foot each line removed.

20	027650040	Remove Pavement Markings	Each

Measurement for removing pavement markers:

1. Measure each letter or single arrow as one pavement message.
2. Measure two-headed arrows as two pavement messages.

21	**027650060**	**Pavement Marking Paint**	**Feet**

Measurement - Painted Pavement Messages:

A. Do not measure the gap in the skip line.

B. Include all costs for the Manufacturer's Service Representative and other technical assistance in the contract unit price.

22	**027710020**	**Concrete Curb Type M2**	**Feet**

In place

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item which is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

PSI below specified strength:	**Pay Factor:**
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

23	**027710035**	**Concrete Curb and Gutter Type M1**	**Feet**

In place

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item which is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

PSI below specified strength:	**Pay Factor:**
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

24	027710100	Plowable End Section	Each

In place
Price Adjustments for Strength
A. When concrete is below specified strength:
1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item which is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

PSI below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

25	027760020	Concrete Median Filler	Sq Ft

In place
Price Adjustments for Strength
A. When concrete is below specified strength:
1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item which is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

PSI below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

26	027860010	Open Graded Surface Course	Ton

Measurement:
In place
A. Include aggregates and all additives including hydrated lime. Provide additional measurements for Asphalt Binder.

27	**027760050**	**Asphalt Cement PG 64-28**	**Ton**

28	**028210004**	**4 ft Chain Link Fence Type II**	**Feet**

29	**028410010**	**Beam Guardrail**	**Feet**

30	**028430035**	**Crash Cushion Type G**	**Each**
In place			

31	**028910005**	**Remove Sign**	**Each**

32	**028910010**	**Relocation of Sign**	**Each**
In place, includes removal and disposal of existing concrete sign base and replacing timber posts with steel posts with slip base.			

33	**028910075**	**Auxiliary Sign Type A-2**	**Sq Ft**
In place			

34	**02891008P**	**Sign Type A-2, 12 inch x 36 inch**	**Each**
In place			

35	**028910115**	**Sign Type A-2, 30 inch x 30 inch**	**Each**
In place			

36	**028910120**	**Sign Type A-2, 36 inch x 36 inch**	**Each**
In place			

37	**029120010**	**Contractor Furnished Topsoil**	**Sq Yd**
In place			

38	**029220040**	**Broadcast Seed**	**1000 Sq Ft**
In place			

39	**02831000***	**MSE Block Retaining Wall (Est. Exposed Surface Area = 690 Sq. Ft.)**	**Lump**
Includes excavation, select backfill and all other materials and items required for construction of retaining wall.			

40	**02892001D**	**Traffic Signal System I-15 NB Ramp & Parrish Lane**	**Lump**
Includes all materials and workmanship to provide a complete and fully operational signal system.			

41	**02892002D**	**Traffic Signal System I-15 SB Ramp & Parrish Lane**	**Lump**
Includes all materials and workmanship to provide a complete and fully operational signal system.			

42	**02892003D**	**Temporary Traffic Signal System**	**Lump**
Includes all materials and workmanship to provide a complete and fully operational signal system.			

43	**135520010**	**Ramp Meter Signals and Signing System**	**Lump**
Includes all materials and workmanship to provide a complete and fully operational ATMS, and ramp meter signal system.			

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IX. PDBS Project Summary Report

Summary Report

Project: SP-15-7(170)320 **Version: 1**

I-15 NB OFF RAMP AT PARRISH LANE

Detail	Alt Group	Alt #	Description
10 - ROADWAY	0	0	

Item Number	Description	Qty	Unit
012850010	Mobilization	1	Lump
013150010	Public Information Services	1	Lump
015540005	Traffic Control	1	Lump
01557001*	Maintenance of Traffic	1	Lump
015720020	Dust Control and Watering	50	1000 gal
020560020	Granular Borrow	1,268	Ton
02221007*	Remove Delineator	4	Each
022210075	Remove Guardrail	367	ft
02222000*	Remove Plowable end Section	2	Each
022220020	Remove Concrete Curb and Gutter	176	ft
02224001P	Disposal of Asphalt Material (Est. Quantity 516 Sq. Yd.)	1	Lump
023160020	Roadway Excavation (Plan Quantity)	988	cu yd
023760010	Erosion Control Blanket	278	sq yd
027210070	Untreated Base Course 3/4 inch or 1 inch Max	475	Ton
027410060	HMA - 3/4 inch	434	Ton
027480010	Liquid Asphalt MC-70 or MC-250	1	Ton
027480040	Emulsified Asphalt CSS-1	1	Ton
027650020	Pavement Message Paint	189	Each
027650030	Remove Pavement Markings	2,780	ft
027650040	Remove Pavement Markings	56	Each
027650060	Pavement Marking Paint	4,301	ft
027710020	Concrete Curb Type M2	522	ft
027710035	Concrete Curb and Gutter Type M1	170	ft
027710100	Plowable End Section	3	Each
027760020	Concrete Median Filler	202	sq ft
027860010	Open Graded Surface Course	65	Ton
027860050	Asphalt Cement PG 64-28	4	Ton
028210014	4 ft Chain Link Fence, Type II	143	ft
028410010	Beam Guardrail	800	ft

Summary Report

Project: SP-15-7(170)320 **Version: 1**

I-15 NB OFF RAMP AT PARRISH LANE

Detail	Alt Group	Alt #	Description
10 - ROADWAY	0	0	

Item Number	Description	Qty	Unit
028430035	Crash Cushion Type G	2	Each
028910005	Remove Sign	7	Each
028910010	Relocation of Sign	8	Each
028910075	Auxiliary Sign Type A-2	10	sq ft
02891008P	Sign Type A-2, 12 inch X 36 inch	3	Each
028910115	Sign Type A-2, 30 inch X 30 inch	2	Each
028910120	Sign Type A-2, 36 inch X 36 inch	1	Each
029120010	Contractor Furnished Topsoil	384	sq yd
029220040	Broadcast Seed	3	1000sqft

Detail	Alt Group	Alt #	Description
20 - STRUCTURES	0	0	MSE Block Retaining Wall R-422

Item Number	Description	Qty	Unit
02831000*	MSE Block Retaining Wall (Est. exposed surface area = 690 sq ft)	1	Lump

Detail	Alt Group	Alt #	Description
50 - SIGNALS	0	0	

Item Number	Description	Qty	Unit
02892001D	Traffic Signal System I-15 NB Ramp & Parrish Lane	1	Lump
02892002D	Traffic Signal System I-15 SB Ramp & Parrish Lane	1	Lump
02892003D	Temporary Traffic Signal System	1	Lump

Detail	Alt Group	Alt #	Description
70 - ATMS	0	0	

Item Number	Description	Qty	Unit
135520010	Ramp Meter Signals and Signing System	1	Lump

State-Red Book with Full Size Plan Sheets

X. PDBS Detailed Stationing Summaries Report

Detailed Report

SP-15-7(170)320 Version: 1

I-15 NB OFF RAMP AT PARRISH LANE

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
015720020	**Dust Control and Watering**	50	1000 gal

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85	6.00 RT	13+13.42	12.00 LT	49.637	RAMP SURFACING
NB RMP	11+43.53	2.50 RT	13+13.42	2.50 RT	0.199	CURB AND GUTTER
NB RMP	11+71.80	36.10 LT	12+01.50	33.25 LT	0.224	RAISED ISLAND
PAR LN	15+11.00	4.61 RT	15+35.63	4.61 RT	0.031	RAISED ISLAND
PAR LN	19+15.63	10.45 LT	20+03.66	14.55 LT	0.061	RAISED ISLAND
					50.152	

020560020	**Granular Borrow**	1,268	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		1,267.93	Ramp Surfacing
					1,267.93	

02221007*	**Remove Delineator**	4	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+69.50	10.10 RT			1.0	
NB RMP	6+69.80	3.80 RT			1.0	
NB RMP	7+67.90	2.20 RT			1.0	
NB RMP	8+94.30	0.50 RT			1.0	
					4.0	

022210075	**Remove Guardrail**	367	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	8+38.07	39.80 LT	8+64.90	39.90 LT	26.83	
NB RMP	8+96.10	0.10 LT	12+26.70	11.40 LT	339.8	
					366.63	

02222000*	**Remove Plowable end Section**	2	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	15+30.84		15+25.63		1.0	
PAR LN	19+15.83		19+20.75		1.0	
					2.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
022220020	**Remove Concrete Curb and Gutter**	176	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+63.70	13.10 LT	13+13.40	2.50 RT	175.6	
					175.6	

Item Number	Description	Use Qty	Unit
02224001P	**Disposal of Asphalt Material (Est. Quantity 516 Sq. Yd.)**	1	Lump

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		1.0	
					1.0	

Item Number	Description	Use Qty	Unit
023160020	**Roadway Excavation (Plan Quantity)**	988	cu yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		988.0	
					988.0	

Item Number	Description	Use Qty	Unit
023760010	**Erosion Control Blanket**	278	sq yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	9+20.00		13+13.42		278.0	
					278.0	

Item Number	Description	Use Qty	Unit
027210070	**Untreated Base Course 3/4 inch or 1 inch Max**	475	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		455.0	Ramp Surfacing
NB RMP	11+43.53		13+13.42		7.645	Curb & Gutter
NB RMP	11+71.80		12+01.50		8.574	Raised Island
PAR LN	15+11.00		15+35.63		1.201	Raised Island
PAR LN	19+15.63		20+03.66		2.282	Raised Island
					474.702	

Item Number	Description	Use Qty	Unit
027410060	**HMA - 3/4 inch**	434	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+71.80		12+01.50		8.574	Raised Island
NB RMP	5+60.85		13+13.42		425.353	Ramp Surfacing
					433.927	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027480010	**Liquid Asphalt MC-70 or MC-250**	1	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+71.80		12+01.50		0.043	Raised Island
NB RMP	5+60.85		13+13.42		1.054	Ramp Surfacing
					1.097	

Item Number	Description	Use Qty	Unit
027480040	**Emulsified Asphalt CSS-1**	1	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+71.80		12+01.50		0.035	Raised Island
NB RMP	5+60.85		13+13.42		0.875	Ramp Surfacing
					0.91	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027650020	**Pavement Message Paint**	189	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	9+25.00	6.00 LT			1.0	RIGHT ARROW
NB RMP	9+25.00	18.00 LT			1.0	RIGHT ARROW
NB RMP	9+25.00	30.00 LT			2.0	LEFT - THROUGH ARROW
NB RMP	10+05.00	6.00 LT			1.0	RIGHT ARROW
NB RMP	10+05.00	18.00 LT			1.0	RIGHT ARROW
NB RMP	10+05.00	30.00 LT			2.0	LEFT - THROUGH ARROW
NB RMP	11+25.30	6.60 LT			1.0	RIGHT ARROW
NB RMP	11+25.30	20.10 LT			1.0	RIGHT ARROW
NB RMP	11+25.30	33.80 LT			2.0	LEFT - THROUGH ARROW
NB RMP	11+76.10	58.70 LT			2.0	LEFT - THROUGH ARROW
PAR LN	9+62.60	16.00 RT			2.0	RIGHT - THROUGH ARROW
PAR LN	10+40.40	15.00 RT			2.0	RIGHT - THROUGH ARROW
PAR LN	10+63.50	1.80 LT	10+63.00	27.60 RT	2.0	Paint Over Exist. STOP BAR 24"
PAR LN	10+73.80	33.40 LT	11+15.00	33.70 LT	2.0	Paint Over Exist. STOP BAR 24"
PAR LN	11+61.80	0.00 RT	11+62.20	23.30 LT	2.0	Paint Over Exist. STOP BAR 24"
PAR LN	11+72.00	6.00 LT			1.0	LEFT ARROW
PAR LN	11+72.00	18.00 LT			2.0	LEFT - THROUGH ARROW
PAR LN	12+12.70	6.00 LT			4.0	ONLY
PAR LN	12+52.00	18.00 LT			2.0	LEFT - THROUGH ARROW
PAR LN	12+55.80	6.00 LT			1.0	LEFT ARROW
PAR LN	13+39.30	7.00 RT			1.0	LEFT ARROW
PAR LN	13+77.30	7.00 RT			4.0	ONLY
PAR LN	14+00.00	6.00 LT			1.0	LEFT ARROW
PAR LN	14+00.00	17.8 LT			2.0	LEFT-THROUGH ARROW
PAR LN	14+12.60	7.00 RT			1.0	LEFT ARROW
PAR LN	14+24.60	1.10 LT	14+24.00	23.50 RT	2.0	Paint Over Exist. STOP BAR 24"
PAR LN	14+81.30	28.00 RT	15+00.40	28.00 RT	2.0	STOP BAR NB RMP 24"
PAR LN	15+13.00	2.00 RT	15+13.00	53.60 LT	3.0	STOP BAR WB Lane 24"
PAR LN	15+23.00	18.00 LT			2.0	RIGHT - THROUGH ARROW
PAR LN	16+03.00	18.00 LT			2.0	RIGHT - THROUGH ARROW
PAR LN	16+99.00	38.00 RT			2.0	RIGHT-THROUGH ARROW
PAR LN	17+79.00	38.00 RT			2.0	RIGHT-THROUGH ARROW
PAR LN	20+11.30	37.60 RT			2.0	RIGHT-THROUGH ARROW

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	20+91.30	37.60 RT			2.0	RIGHT-THROUGH ARROW
PAR LN	21+03.90	15.70 LT	21+00.70	44.30 RT	5.0	Paint Over Exist. STOP BAR
PAR LN	21+10.80	47.00 LT	21+04.80	45.80 RT	14.0	Paint Over Exist. CROSSWALK
PAR LN	21+19.60	48.40 LT	21+14.00	46.70 RT	14.0	Paint Over Exist. CROSSWALK
PAR LN	22+07.80	62.50 LT	22+12.60	50.90 RT	14.0	Paint Over Exist. CROSSWALK
PAR LN	22+17.00	61.90 LT	22+21.00	48.60 RT	14.0	Paint Over Exist. CROSSWALK
PAR LN	22+21.90	59.20 LT	22+24.20	4.10 RT	4.0	Paint Over Exist. STOP BAR
PAR LN	26+53.70	32.30 RT			2.0	RIGHT-THROUGH ARROW
PAR LN	27+33.70	32.10 RT			2.0	RIGHT-THROUGH ARROW
PAR LN	27+49.60	10.00 LT	27+48.20	39.40 RT	4.0	Paint Over Exist. STOP BAR
PAR LN	27+54.70	53.70 LT	27+52.20	40.80 RT	12.0	Paint Over Exist. CROSSWALK
PAR LN	27+64.50	43.60 LT	27+62.20	40.40 RT	12.0	Paint Over Exist. CROSSWALK
PAR LN	28+25.00	42.90 LT	28+37.40	40.20 RT	12.0	Paint Over Exist. CROSSWALK
PAR LN	28+35.00	43.90 LT	28+47.60	40.20 RT	12.0	Paint Over Exist. CROSSWALK
PAR LN	28+39.30	42.20 LT	28+45.60	0.00 RT	4.0	Paint Over Exist. STOP BAR
SB RMP	11+83.50	0.50 RT	11+83.10	23.70 RT	2.0	Paint Over Exist. STOP BAR

027650030 **Remove Pavement Markings** 2,780 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.80	0.00 RT	8+48.00	9.60 LT	287.36	SOLID WHITE
NB RMP	8+94.00	22.40 LT	11+79.50	53.10 LT	309.7	SOLID WHITE
NB RMP	9+18.10	37.00 LT	11+73.80	64.90 LT	283.7	SOLID YELLOW
PAR LN	16+67.60	33.00 RT	21+00.60	29.70 RT	433.013	SOLID WHITE
PAR LN	16+78.20	21.40 RT	20+01.90	18.40 RT	80.928	SKIP WHITE
PAR LN	17+54.60	9.50 RT	20+35.40	2.90 LT	281.074	SOLID WHITE
PAR LN	17+54.60	9.50 RT	21+01.70	7.10 RT	347.108	SOLID WHITE
PAR LN	19+19.90	9.50 LT	20+34.20	16.40 LT	114.508	SOLID YELLOW
PAR LN	19+20.00	7.90 LT	20+34.30	14.70 LT	114.502	SOLID YELLOW
PAR LN	19+20.20	14.40 LT	21+04.60	15.60 LT	184.404	SOLID YELLOW
PAR LN	19+20.20	16.20 LT	21+04.60	17.30 LT	184.403	SOLID YELLOW
PAR LN	20+35.40	2.90 LT	21+02.50	3.00 LT	67.1	SOLID WHITE
PAR LN	22+21.20	29.80 RT	23+13.20	29.40 RT	92.001	SOLID WHITE
					2,779.801	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027650040	**Remove Pavement Markings**	56	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	10+83.00	17.00 LT			1.0	RIGHT ARROW
NB RMP	10+83.30	29.00 LT			2.0	LEFT - THROUGH ARROW
NB RMP	11+26.40	20.00 LT			4.0	ONLY
NB RMP	11+70.00	30.00 LT			1.0	RIGHT ARROW
NB RMP	11+70.00	43.00 LT			2.0	LEFT - THROUGH ARROW
PAR LN	14+82.40	34.00 RT			2.0	STOP BAR
PAR LN	15+44.70	0.20 RT			2.0	STOP BAR
PAR LN	15+71.10	15.00 LT			1.0	RIGHT ARROW
PAR LN	16+53.80	18.00 LT			1.0	RIGHT ARROW
PAR LN	16+85.70	39.00 RT			4.0	ONLY
PAR LN	17+22.10	39.00 RT			1.0	RIGHT ARROW
PAR LN	17+43.80	38.00 RT			4.0	ONLY
PAR LN	20+11.00	37.00 RT			4.0	ONLY
PAR LN	20+50.00	37.00 RT			1.0	RIGHT ARROW
PAR LN	25+50.00	33.00 RT			4.0	ONLY
PAR LN	25+80.00	33.00 RT			1.0	RIGHT ARROW
PAR LN	26+66.00	32.00 RT			4.0	ONLY
SB RMP	11+83.60	17.00 RT			1.0	HOV DIAMOND
SB RMP	13+17.30	18.00 RT			1.0	HOV DIAMOND
SB RMP	14+40.00	20.00 RT			1.0	HOV DIAMOND
SB RMP	15+79.80	20.00 RT			1.0	HOV DIAMOND
SB RMP	17+11.40	18.00 RT			1.0	HOV DIAMOND
SB RMP	17+51.10	18.00 RT			4.0	LANE
SB RMP	18+09.80	17.00 RT			4.0	POOL
SB RMP	18+64.00	16.00 RT			3.0	CAR
SB RMP	19+07.00	16.00 RT			1.0	HOV DIAMOND
					56.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027650060	**Pavement Marking Paint**	4,301	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.80	0.00 RT	9+20.80	24.00 LT	90.2	4" DOTTED WHITE
NB RMP	5+60.80	0.00 RT	9+20.80	0.00 RT	360.0	4" SOLID WHITE
NB RMP	9+20.80	12.00 LT	10+83.50	12.00 LT	162.7	8" SOLID WHITE
NB RMP	9+20.80	24.00 LT	10+83.50	25.00 LT	162.7	8" SOLID WHITE
NB RMP	9+20.80	36.00 LT	11+78.00	76.60 LT	299.2	4" SOLID YELLOW
NB RMP	9+20.80	0.00 RT	10+83.50	0.00 RT	162.7	4" SOLID WHITE
NB RMP	10+83.50	0.00 RT	11+43.50	0.00 RT	60.0	4" SOLID WHITE
NB RMP	10+83.50	12.00 LT	11+43.50	14.00 LT	60.0	8" SOLID WHITE
NB RMP	10+83.50	24.00 LT	11+43.50	28.00 LT	60.1	8" SOLID WHITE
NB RMP	11+43.50	28.00 LT	11+85.00	60.80 LT	77.1	8" SOLID WHITE
NB RMP	11+43.50	14.00 LT	12+29.00	14.00 LT	105.4	8" SOLID WHITE 74' RADIUS
NB RMP	11+43.50	28.00 LT	12+29.00	28.00 LT	125.3	8" SOLID WHITE 88' RADIUS
NB RMP	12+29.00	14.00 LT	12+50.00	13.50 LT	21.0	8" SOLID WHITE
NB RMP	12+29.00	28.00 LT	12+50.00	23.00 LT	21.0	8" SOLID WHITE
PAR LN	10+98.80	47.50 RT	11+62.00	12.40 LT	26.8	4" DOTTED WHITE 60' RADIUS
PAR LN	14+23.40	12.50 RT	14+79.30	12.50 RT	14.0	4" DOTTED WHITE
PAR LN	14+23.40	24.00 RT	14+79.30	24.00 RT	55.9	4" SOLID WHITE
PAR LN	14+79.30	12.50 RT	15+11.00	9.60 RT	8.0	4" DOTTED WHITE
PAR LN	15+01.10	23.30 RT	15+81.90	21.10 RT	80.8	8" SOLID WHITE
PAR LN	15+09.90	9.60 RT	15+30.60	9.30 RT	20.7	4" SOLID YELLOW
PAR LN	15+11.00	2.40 RT	15+32.00	2.10 RT	21.0	4" SOLID YELLOW
PAR LN	15+11.00	9.30 LT	15+46.00	10.20 LT	8.8	4" SKIP WHITE
PAR LN	16+03.00	21.10 RT	20+03.70	20.50 RT	100.2	4" SKIP WHITE
PAR LN	16+03.60	34.60 RT	16+67.60	33.00 RT	16.0	4" SKIP WHITE
PAR LN	16+67.60	33.00 RT	20+03.70	32.50 RT	84.0	4" SKIP WHITE
PAR LN	17+54.60	9.50 RT	20+03.70	0.70 LT	249.3	8" SOLID WHITE
PAR LN	17+54.60	9.50 RT	21+02.40	8.50 RT	347.8	8" SOLID WHITE
PAR LN	19+15.60	15.60 LT	21+03.70	16.80 LT	188.1	4" SOLID YELLOW
PAR LN	19+16.00	8.20 LT	20+03.70	12.30 LT	87.8	4" SOLID YELLOW
PAR LN	20+03.70	31.70 RT	21+01.30	31.70 RT	97.6	4" SOLID WHITE
PAR LN	20+03.70	20.10 RT	21+01.80	20.10 RT	98.1	4" SOLID WHITE
PAR LN	20+03.70	0.70 LT	21+02.90	0.70 LT	99.2	8" SOLID WHITE
PAR LN	20+03.70	12.30 LT	21+03.70	12.30 LT	100.0	4" SOLID YELLOW

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	22+21.20	29.80 RT	23+13.20	29.40 RT	23.0	4" SKIP WHITE
PAR LN	28+45.50	26.20 RT	29+45.50	25.50 RT	25.0	4" SKIP WHITE
PAR LN	29+45.50	25.50 RT	31+95.50	23.70 RT	50.0	4" LANE DROP WHITE
PAR LN	31+95.50	34.70 RT	34+20.50	22.10 RT	225.0	4" SOLID WHITE
PAR LN	34+20.50	22.10 RT	34+45.50	21.90 RT	24.5	4" SOLID WHITE
SB RMP	11+83.30	12.30 RT	15+40.80	13.50 RT	357.5	8" SOLID WHITE - PAINT OVER EXIST LINE
SB RMP	15+40.80	13.50 RT	20+37.70	12.20 RT	124.2	4" SKIP WHITE - PAINT OVER EXIST LINE

027710020 **Concrete Curb Type M2** 522 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+71.80	36.10 LT	11+84.99	53.58 LT	28.82	RAISED ISLAND
NB RMP	11+72.36	33.25 LT	12+01.50	33.25 LT	45.3	RAISED ISLAND
NB RMP	11+84.99	53.58 LT	12+01.50	33.25 LT	34.78	RAISED ISLAND
PAR LN	15+11.00	4.61 RT	15+35.56	4.61 RT	24.56	RAISED ISLAND
PAR LN	15+11.00	7.32 RT	15+35.70	7.32 RT	24.7	RAISED ISLAND
PAR LN	19+15.63	13.33 LT	20+03.66	14.55 LT	88.038	RAISED ISLAND
PAR LN	19+16.00	10.45 LT	20+03.66	14.55 LT	87.756	RAISED ISLAND
PAR LN	20+03.66	14.55 LT	20+97.66	14.55 LT	188.0	RAISED ISLAND, 2 Curbs Back to Back
					521.954	

027710035 **Concrete Curb and Gutter Type M1** 170 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
MB RMP	11+43.53	2.50 RT	13+13.42	2.50 RT	169.89	Lip is on NB Control Line
					169.89	

027710100 **Plowable End Section** 3 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+68.49	33.21 LT	11+70.80	34.66 LT	1.0	
PAR LN	15+05.00	5.96 RT	15+11.00	5.96 RT	1.0	
PAR LN	20+97.66	14.55 LT	21+03.66	14.55 LT	1.0	
					3.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027760020	**Concrete Median Filler**	202	sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	15+11.00	5.96 RT	15+38.70	5.96 RT	75.067	
PAR LN	19+15.63	11.89 LT	20+03.66	14.55 LT	126.821	
					201.888	

027860010	**Open Graded Surface Course**	65	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		64.492	Ramp Surfacing
					64.492	

027860050	**Asphalt Cement PG 64-28**	4	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+60.85		13+13.42		3.999	Ramp Surfacing
					3.999	

028210014	**4 ft Chain Link Fence, Type II**	143	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+56.00	6.67 RT	13+13.42	5.60 RT	143.41	1 Foot Behind Retaining Wall
					143.41	

028410010	**Beam Guardrail**	800	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+50.00	9.60 RT	10+83.53	9.60 RT	533.53	Long Post Installation
NB RMP	10+83.53	9.60 RT	11+43.53	3.60 RT	60.299	Long Post Installation
NB RMP	11+43.53	3.60 RT	13+50.00	3.60 RT	206.47	Long Post Installation
					800.299	

028430035	**Crash Cushion Type G**	2	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	5+00.00	10.60 RT	5+50.00	9.60 RT	1.0	
NB RMP	8+14.90	37.00 LT	8+64.90	39.90 LT	1.0	Connect to existing guardrail
					2.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
028910005	**Remove Sign**	7	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	17+65.30	50.80 RT			1.0	
SB RMP	11+96.40	36.10 RT			1.0	
SB RMP	13+16.10	36.30 RT			1.0	
SB RMP	14+40.00	39.70 RT			1.0	
SB RMP	14+78.90	38.90 RT			1.0	
SB RMP	17+11.00	38.00 RT			1.0	
SB RMP	19+03.20	39.00 RT			1.0	
					7.0	

028910010	**Relocation of Sign**	8	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	7+77.60	2.30 RT	7+28.00	12.00 RT	1.0	Replace timber post with steel post with slip base
NB RMP	8+92.10	4.40 RT	8+42.00	12.00 RT	1.0	Replace timber post with steel post with slip base
NB RMP	10+41.90	0.60 LT	10+41.90	12.00 RT	1.0	Replace timber post with steel post with slip base
NB RMP	11+57.80	2.40 LT	11+42.00	8.00 RT	1.0	Replace timber post with steel post with slip base
NB RMP	12+67.80	0.90 LT	13+15.00	7.00 RT	1.0	Replace timber post with steel post with slip base
PAR LN	15+36.80	6.00 RT	15+12.00	5.96 RT	1.0	Replace timber post with steel post with slip base
PAR LN	19+15.00	11.80 LT	20+96.70	14.55 LT	2.0	Replace timber post with steel post with slip base
					8.0	

028910075	**Auxiliary Sign Type A-2**	10	sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	9+20.00	12.00 RT			10.0	LEFT-THROUGH, DOUBLE RIGHT
					10.0	

02891008P	**Sign Type A-2, 12 inch X 36 inch**	3	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+72.68	34.96 LT			1.0	OBM1
PAR LN	15+12.00	5.96 RT			1.0	OM 3R Install on relocated sign
PAR LN	20+96.70	14.55 LT			1.0	OM 3R Install on relocated sigh
					3.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
028910115	**Sign Type A-2, 30 inch X 30 inch**	2	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
PAR LN	14+27.00	28.50 LT			1.0	R3-8
PAR LN	28+75.00	41.50 RT			1.0	W4-2R
					2.0	

028910120	**Sign Type A-2, 36 inch X 36 inch**	1	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SB RMP	13+00.00	12.00 LT			1.0	W4-2R
					1.0	

029120010	**Contractor Furnished Topsoil**	384	sq yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	9+20.85		13+13.42		384.0	
					384.0	

029220040	**Broadcast Seed**	3	1000sqft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	9+20.85		13+13.42		3.4	
					3.4	

Detailed Report

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Version: 1

I-15 NB OFF RAMP AT PARRISH LANE

20 - STRUCTURES **Alt Group: 0** **Alt #: 0** **MSE Block Retaining Wall R-422**

Item Number	Description	Use Qty	Unit
02831000*	**MSE Block Retaining Wall (Est. exposed surface area = 690 sq ft)**	1	Lump

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
NB RMP	11+56.00	7.67 RT	13+13.42	6.60 RT	1.0	
					1.0	

State-Red Book with Full Size Plan Sheets

XI. Special Provisions

Special Provision
SP-15-7(170)320

SECTION 00555M

PROSECUTION AND PROGRESS

Add the following to Article 1.12: Limitation of Operations

1.12 LIMITATION OF OPEARATIONS

A. 3. Keep one lane of traffic in each direction open at all times.

4. Perform no work on west bound Parrish Lane and the I-15 south bound on ramp between the hours of 7:00 am. and 9:00 am.
Perform no work on the I-15 north bound off ramp and east bound Parrish Lane between the hours of 4:00 pm. and 7:00 pm.

5. Perform signal change over from existing system to temporary system and from temporary system to new system on weekends.

6. Contact Centerville City two weeks prior to signal change overs to arrange for law enforcement officers to assist with traffic control. The contact person at Centerville City is:

Chief Neal Worsley
or
LT. Paul Child
Phone no. (801)292-8411

7. Minimize impact to fiber optic ATMS system. Limit interruption of fiber optic service to 5 days maximum.

April 7, 2003

SPECIAL PROVISION

SP-15-7(170)320

SECTION 01282M

PAYMENT

Delete Article 1.13 G2 and renumber 3 to 2

END OF SECTION

March 17, 2003

Special Provision
SP-15-7(170)320

SECTION 01557S

MAINTENANCE OF TRAFFIC

PART 1 GENERAL

1.1 SECTION INCLUDES

A. MOT maintainer

B. Maintenance of Traffic (MOT) plans, materials, and labor necessary for implementation.

C. Variable message signs and construction signs.

1.2 RELATED SECTIONS

A. Section 00555: Prosecution and Progress.

B. Section 01554: Traffic Control.

C. Section 02842: Delineators.

D. Section 02891: Traffic Signs.

1.3 REFERENCES

A. Manual on Uniform Traffic Control Devices, Latest Edition (MUTCD).

B. UDOT Standard Drawings.

C. American Traffic Safety Services Association (ATSSA).

1.4 DEFINITIONS

A. Maintenance of Traffic (MOT) is defined as the work necessary to advise the public of changes to normal traffic flow, and to indicate planned detours and alternate routes to closed roads. It is intended to be used solely as advisory information to the public.

1.5 POST-BID REQUIREMENTS

A. DEPARTMENT will provide MOT plans to be implemented as part of the bid package.

B. The apparent low bidder will attend a mandatory meeting as detailed in the Section 01664. Attendees of the mandatory meeting will review the CONTRACTOR's submitted traffic control plans and the DEPARTMENT's supplied MOT plans for compatibility. Modify plans where necessary, as set forth in Section 01554.

C. Do not begin work on the project until written approval of the MOT plan is received from the ENGINEER. No item of work can begin until the approved MOT plan is implemented for that phase of work.

1.6 MOT MAINTAINER

A. The Traffic Control Maintainer, as specified in section 01554 is responsible for the maintenance of MOT on the project. No separate payment will be made for maintenance of MOT.

B. Inspect MOT devices daily for compliance with the MOT plans Submit daily inspection reports on a form acceptable to the ENGINEER. Record readings from devices using hour meters on the form.

1.7 MAINTENANCE OF MOT DEVICES

A. Maintain traffic control devices as per Section 01554.

1.8 WAGE RATED FOR TRAFFIC CONTROL (FEDERAL AID JOBES OBLY)

A. Refer to Section 01554 for wage rate information.

1.9 PAYMENT PROCEDURES

A. Partial Payments – Based on the percentage of the project completed, excluding the cost of MOT.
   1. Failure to comply with any of the requirements of this special provision will result in non-compliance.

B Price Adjustments:
   1. The Department reduces payment if the MOT is not in compliance with the approved MOT plan, as determined by the ENGINEER.
   2. The amount per day by which the CONTRACTOR's compensation will be reduced is calculated using the daily charge in the Schedule of Liquidated Damages in Table 1 of Section 00555 or the Contract lump sum bid price for MOT divided by the number of Contract days, whichever is greater.

C. Payment for change in scope: Negotiate a price adjustment for MOT if the ENGINEER orders a change in the scope of work which requires modification to the approved MOT plan.

PART 2 PRODUCTS

2.1 SIGNS

A. Refer to Section 02891, Traffic Signs.

B. Type and configuration as directed by the MOT plans.

2.2 VARIABLE MESSAGE SIGN (VMS)

A. Advance warning device

   1. Conform to guidelines set forth in Section 6F-2 of the MUTCD.
   2. Messages can be changed on-site by dial-up modem.

PART 3 EXECUTION

3.1 MODIFICATION OF MOT PLANS

A. ENGINEER may modify the MOT plans at any time.

B. Implement changes to the MOT plan before the end of the work shift.

C. Each phase of construction must be covered by an approved MOT plan. If a construction phase is proposed that is not covered by a DEPARTMENT supplied MOT plan, submit a proposed MOT plan to the ENGINEER for approval.
   1. Submit proposed MOT plan to the ENGINEER 10 working days before the proposed MOT plan is to be implemented.
   2. Do not begin work until the proposed MOT plan is approved for use, and has been fully implemented.

3.2 TRAFFIC CONTROL DEVICES

A. Installation and Maintenance:
   1. Install appropriate devices for each construction phase as identified in the appropriate MOT plan.
   2. Maintain devices to provide proper, continuous functionality.
   3. Wash devices weekly unless conditions warrant more frequent cleaning.
   4. Replace any device missing any part of the message or background.

B. Channelizing Devices: Use as directed by the MOT plan.
   1. Furnish daily record of the number and location of all traffic control devices in use.
   2. Remove devices from the site of work when they are not needed for the immediate control of traffic.

3.3 VARIABLE MESSAGE SIGN (VMS)

A. The DEPARTMENT will retain control of messages appearing on the VMS. The CONTRACTOR will not change the location or the message configuration of the VMS unless directed to by the ENGINEER.

B. Place in view of oncoming traffic without obstruction traffic flow. Relocate VMS to match field conditions at no additional cost t DEPARTMENT.

C. Provide dial-up modem number to the ENGINEER.

D. Use necessary traffic control devices with VMS to provide sate operation.

E. Remove devices from site of work when they are not needed for the immediate control of traffic.

F. Unless directed by the Engineer, display advance notification messages for 7 days prior to beginning work and continue for 7 days after beginning work.

G. Make two VMS signs available at all times during the project to be used as directed by the ENGINEER at no additional cost to the DEPARTMENT.

END OF SECTION

July 5, 2002

Special Provision

SP-15-7(170)320

SECTION 01721S

SURVEY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Schedule, coordinate and provide all construction surveying, staking, surface area and volume quantity computations, and calculations essential to complete the project and properly control the entire work.

B. Directed surveying as requested by the ENGINEER.

1.2 RELATED SECTIONS

A. Section 02896: Boundary Survey

1.3 MEASUREMENT PROCEDURES

A. Directed Survey: If extra survey work is needed, directed Survey 2-Person Crew will be measured by the hour authorized. Department will make no additional payment for travel time to and from the project.

B. Directed Survey: If extra survey work is needed 3-Person Crew will be measured by the hour authorized. DEPARTMENT will make no additional payment for travel time to and from the project.

1.4 PAYMENT PROCEDURES

A. Survey will not be paid as a separate item, but will be included in all items of work that require surveying. Failure to comply with any portion of this specification may result in withholding up to 25% of contract payments until the deficiencies are corrected.

B. If needed and approved, directed survey work will be paid for in the accepted quantities at the following rates:

2 person survey crew	$130.00 per hour
3 person survey crew	$155.00 per hour

C. If needed, payment for computations and/or drafting will be paid for at a rate to be agreed upon prior to proceeding with directed survey work. The number of hours required for computations and drafting cannot exceed 33% of actual survey hours and will be established on a percent basis prior to directed survey work starting.

D. No payments, partial or final, will be made without approved quantity submittals.

1.5 SUBMITTALS

A. The Department requires that a Professional Engineer or Professional Land Surveyor duly and properly registered in the State of Utah sign and seal all submittals.

B. Resubmittals may be required depending on completeness and correctness of the work.

C. Prior to beginning work, submit a statement indicating that the contractor has field checked all DEPARTMENT-provided horizontal and vertical control and has determined the control to be accurate within the tolerances specified in Part 3.4. Attach field survey information used to verify control. If discrepancies are found, notify the ENGINEER verbally and in writing.

D. Prior to beginning work, provide a written description of the equipment (including calibration certification), manpower, methods and data storage format the contractor proposes to use to complete all survey activities.

E. Submit electronic files, plots and calculations of appropriate bid item quantities to the Engineer for review and approval, a minimum of 3 working days prior to the pre-determined estimate cut-off date.

E. Submit plots of the original cross sections in Microstation format and superimpose the design cross sections as slope staked.

F. Record-keeping: Keep all field notes, diaries, books and electronic files according to standard surveying practice.
   1. Loose leaf books will not be accepted.
   2. Make available at any time any and all survey records including field notebooks and forms used for the work to the ENGINEER upon verbal or written request.

3. During construction, keep all documentation at a location approved by the ENGINEER.

G. After project completion, return to the ENGINEER all surveying and design data and "as staked/constructed" drawings in Microstation format clearly showing all final dimensions, lines, grades, tie-ins and deviations from contract plans.

1.6 QUALITY ASSURANCE

A. CONTRACTOR is responsible for survey and control of the work, and for correcting CONTRACTOR errors, whether the errors are discovered during the actual survey work or in subsequent phases of the project. CONTRACTOR bears any cost overruns resulting from CONTRACTOR errors.

B. Complete a preliminary verification of the plans and specifications prior to beginning construction.
1. Immediately notify the ENGINEER of any discrepancies or deficiencies including discrepancies in grade, elevations, alignment, locations and/or dimensions.
2. As the work progresses notify the ENGINEER of any discrepancies between the field survey and contract plans.

C. CONTRACTOR is not relieved by Submittal acceptance of the responsibility for maintaining the survey work and for correcting errors, whether the errors are discovered during the actual survey work or in subsequent phases of the project.

D. Qualifications: Furnish technically qualified survey crews and crew supervisor experienced in highway and bridge surveying and layout.

E. Perform all work in accordance with the plans and specifications and standard Engineering and Surveying practices under the responsible charge of a Professional Engineer or Professional Land Surveyor duly and properly registered in Utah.

F. The ENGINEER may spot check the work for accuracy and may reject unacceptable portions of work. Resurvey rejected work and correct work that is not within the specified tolerances at no additional expense to the DEPARTMENT.

G. The Engineer will randomly field verify a minimum of 5% of the submitted quantities for bid items involving area and volume measurements. When calculations are not within 5%, the engineer will review and check calculations to resolve differences.

H. Changes in alignment, grade, or scope of work that change the earthwork quantities will be calculated and that quantity will be treated as a change in the plan quantities. Payments will be as per section 01282 of UDOT's 2002 Imperial Standard Specifications For Road and Bridge Construction, CSI Format.

PART 2 PRODUCTS

2.1 EQUIPMENT

A. Furnish tools, supplies and stakes suitable for use in highway survey work.

B. Furnish stakes and hubs of sufficient length to provide a solid set in the ground with sufficient surface area above ground for necessary legible markings.

C. Furnish survey instruments and supporting equipment capable of achieving the specified tolerances. Calibrate survey equipment for accuracy prior to beginning survey work and as required. Document that all equipment is functioning within manufacturer's tolerances.

PART 3 EXECUTION

3.1 PREPARATION

A. Before survey work begins, discuss and coordinate the following with the ENGINEER:
   1. Required submittals
   2. Survey and staking methods
   3. Stake markings
   4. Grade control
   5. Referencing
   6. Structure control
   7. Any other procedures and control necessary for the work
   8. Documentation procedures

B. Establish construction survey points, elevations and grades as necessary to control layout and complete the work. Verify all control surveying and staking meets specified tolerances prior to beginning work.

C. Calculate all grades, elevations, offsets and alignment data necessary for staking and/or setting items of work. Obtain approval from the ENGINEER for alternate methods of establishing grade control with wire lines, computer or laser controlled grading or other suitable methods.

D. Provide appropriate traffic control for all survey activities.

E. The DEPARTMENT will furnish:
   1. Plans showing locations of control points
   2. Plans showing locations of Bench Marks
   3. Cross sections developed during design, if any
   4. Electronic project data, if any
   5. Digital Terrain Model used for design, if any

3.2 DIRECTED SURVEY

A. Conduct directed surveying if requested by the ENGINEER.
   1. Includes work needed for changes and extra work. Provide all labor, materials and equipment including but not limited to global positioning satellite equipment.
   2. Obtain prior written authorization from the Engineer documenting the affected work and requirements before performing work under these items.

3.3 COMPUTATIONS AND PLOTS

A. Use electronic cross-sections, Microstation format, to calculate pay items that require volume measurements.

   1. Calculate preliminary quantities from this data, using the average end area method and submit plots and calculations to the ENGINEER for approval.
   2. When work is complete, superimpose final cross sections with original cross sections and calculate final quantities using the average end area method.
   3. ENGINEER may approve alternate methods for calculating quantities.

C. Develop cross-sections from field measurements.
   1. Take cross section measurements both before and after excavation and prior to backfill.
   2. When the centerline curve radius is less than or equal to 500 ft, take cross sections at a maximum centerline spacing of 25 ft.
   3. When the centerline curve radius is greater than 500 ft, take cross sections at a maximum spacing of 50 ft.
   4. Take additional cross sections at breaks in terrain and at changes in typical sections.
   5. For each cross section, measure and record points at breaks in terrain, but at least every 25 ft unless otherwise approved by the ENGINEER.
   6. Measure and record points to at least the anticipated slopes and reference locations.
   7. Reduce all cross section distances to horizontal distances from centerline.
   8. Take cross sections at right angles to tangents and normal to curves.
   9. Include in cross sections all grades, locations, and existing ground line profiles.

D. CONTRACTOR may develop cross-sections from digital terrain models provided that:
   1. The ground survey locations do not exceed 100 ft in any direction.
   2. Major breaks in terrain are also included.
   3. The horizontal and vertical control for the project is used.
   4. The DTM is verified accurate to required tolerances by spot checking throughout the length of the project.

3.4 STAKE MAINTENANCE AND MARKING

A. Maintain ALL staking necessary for the work until the construction has been completed and accepted by the ENGINEER.
   1. Legibly mark all survey stakes with station and offset referenced to their respective control line.
   2. Mark slope, reference and guard stakes with station.
   3. Renew illegible stakes at no additional cost to the DEPARTMENT.

B. Provide and maintain reference stakes that identify stationing at least every 100 ft until all work has been completed and accepted by the ENGINEER.

3.5 CONTROL POINT AND SURVEY TOLERANCES

A. Relocate initial horizontal and vertical control points in conflict with construction to areas that will not be disturbed by construction operations. Furnish the coordinates, elevations and survey notes for the relocated points before the initial points are disturbed.

B. Protect bench marks from construction activities. Position all bench marks to allow a level rod to stand vertically and squarely on the mark. Reference bench marks to centerline and horizontal measurements.

C. Survey and establish control within the following tolerances:

Table 1

Survey Tolerances		
Description	Horizontal	Vertical
Control points	+/- 0.01 ft	+/- 0.01 ft
Centerline points	+/- 0.03 ft	+/- 0.02 ft
Cross sections and slope stakes	+/- 0.10 ft	+/- 0.10 ft
Slope stake references	+/- 0.10 ft	+/- 0.10 ft
Culverts and ditches	+/- 0.10 ft	+/- 0.05 ft
Minor drainage structures	+/- 0.10 ft	+/- 0.03 ft
Curb and gutter	+/- 0.03 ft	+/- 0.02 ft
Guardrail	+/- 0.10 ft	+/- 0.05 ft
Retaining walls	+/- 0.10 ft	+/- 0.02 ft
Bridge substructure and overall	+/- 0.01 ft	+/- 0.01 ft
Bridge superstructure and overall	+/- 0.01 ft	+/- 0.01 ft
Clearing and grubbing limits	+/- 1.5 ft	----------
Right of Way Limits	+/- 0.02 ft	----------
Roadway subgrade and finish stakes	+/- 0.10 ft	Meet tolerance of succeeding layer.
Signals, electrical and striping	+/-.05 ft	+/- 0.02 ft
Striping	+/- 0.15 ft	----------

Coordinate the survey tolerances of any items not listed above with the ENGINEER.

D. Tolerances in Table 1 are subordinate to any tolerances listed in other specifications of that item.

E. Staking limits:
   1. Stake clearing limits on both sides of centerline at each established station. Locate the clearing limit on the ground as identified by slope stakes.
   2. Stake right of way limits every 60 ft on tangents, every 30 ft on curves and at all right of way breaks.

F. Furnish reference stakes for all slope stakes and stakes used for setting items for work.
   1. Maintain the reference stakes for the duration of the project until the ENGINEER approves removal.
   2. Establish and set slope stakes and references on both sides of centerline at cross section locations.
   3. Establish slope stakes in the field as the actual point of intersection of the design slope with the natural ground line.
   4. Set slope stake references outside the clearing limits.
   5. Include on the slope stake reference stakes all information necessary to establish offset and elevation of every PI on the typical section.

G. After the slope staking is completed, record on the cross section guard stakes the vertical distance from the reference point (RP) to the construction grade, at a minimum horizontal distance of 10 ft outside the clearing limits or at right of way.

H. Setting grade finishing stakes (redheads):
   1. For grade elevations and horizontal alignment:
      a. On centerline
      b. On each shoulder at roadway cross-section locations and between centerline and shoulder with a maximum spacing of 15 ft.
      c. At the top of subgrade and the top of each aggregate course.

   2. Locations:
      a. Where turnouts are constructed, set stakes on centerline, on each normal shoulder, and on the shoulder of the turnout.
      b. In parking areas, set hubs at the center and along the edges of the parking area.
      c. Set stakes in all ditches to be paved.
   3. The maximum spacing between stakes along the alignment is 50 ft.
   4. Use brushes or guard stakes at each stake.
   5. Reset grade finishing stakes as many times as necessary to construct the subgrade and each aggregate course.

3.6 CONCRETE PAVING

A. Place wire line on each side of screed for each placement.

B. Set string line control with vertical and horizontal control points placed at a maximum spacing of 50 ft.

C. Stake concrete joint and station stamp locations.

3.7 DRAINAGE STRUCTURES

A. Stake drainage structures to fit field conditions and in coordination with the ENGINEER. The location of the structures may differ from the plans.
   1. Determine the slope catch points at inlets and outlets.
   2. Set reference points and record information necessary to determine structure length and end treatments.
   3. Stake ditches or grade to make the structure functional.
   4. Plot the profile along centerline of the structure to show the natural ground, the flow line, the roadway section, and the structure.
   5. Mark guard stakes with the following, when applicable:
      a. Diameter, length and type of culvert (i.e. 18 in x 36 ft corrugated metal pipe (cmp)
      b. The vertical and horizontal distance from the hub to the invert at the end of the culvert or any intermediate point as needed or directed
      c. Flow line grade and slope of the pipe.
      d. Station
   6. For storm sewers and waterlines provide a reference at a maximum spacing of 50 ft. Reference inverts of pipe at all manholes.

3.8 BRIDGES

A. Set a minimum of 3 horizontal and vertical control reference points to be used for all surveying <u>all</u> bridge substructure and superstructure components, including but not limited to: pile locations and cutoffs, line and grade for abutments and bents, beam seats, anchor bolts and screed grades.

B. Set intermediate slope stakes at bridge abutments to establish transitions. Place finish grade stakes on the centerline of abutment bearing and at the top of slope of all bridge berms. Place finish grade stakes on each side at top, mid-point or slope and toe of fill.

3.9 BOX CULVERTS

A. Set horizontal and vertical control and reference points. Establish and reference the centerline, back of parapet, skew and flow line elevations at inlet, outlet and breaks.

3.10 CURB AND GUTTER

A. Set curb and gutter staking at 25 ft intervals on tangent and 15 ft intervals on curve sections. Set line and grade for curb and gutter to the nearest 0.1 in of the proposed or established grade line.

3.11 GUARDRAIL

A. Stake guardrail vertical and horizontal control at a maximum spacing of 25 ft on tangent sections and 15 ft on curved sections unless otherwise approved.

3.12 TRAFFIC STRIPPING

A. Layout all temporary and Permanent traffic striping.
   1. Place references for traffic striping a minimum of 50 ft apart on tangents and a minimum of 25 ft apart on curves.

3.13 EXISTING SURVEY MONUMENTS

A. Under the direction of a surveyor licensed in the State of Utah, locate and reference all private and public land survey monuments that may be destroyed by project construction activities prior to disturbing said monuments.

B. Complete referencing and reestablishing said monuments at no cost to the DEPARTMENT and before project completion.

C. In some counties the county surveyor references and reestablishes the monuments.
   1. Notify the county surveyor at least 30 days prior to the destruction of any monument.
   2. Coordinate the reestablishment of section corner and quarter corner monuments with the county surveyor.
   3. Submit drawings and notes showing references to section corners and quarter corners to the ENGINEER.

D. If a monument is found during construction but is not shown on the contract plans and must be reset, the DEPARTMENT will pay for the additional work under the Directed Survey item.

3.14 CLEAN UP

A. Remove and dispose of all flagging, lath, stakes and other staking material after the project is complete.

END OF SECTION

Special Provision
SP-15-7(170)320

SECTION 02221M

REMOVE STRUCTURE AND OBSTRUCTION

PART 3 EXEXCUTION

Add Paragraph 3.18

3.18 DELINEATOR REMOVAL

A. Remove and dispose of delineators.

END OF SECTION

Special Provision
SP-15-7(170)320

SECTION 02222M

SITE DEMOLITION - CONCRETE

PART 3 EXEXCUTION

Add Paragraph 3.6

3.6 PLOWABLE END SECTION REMOVAL

A. Remove plowable end sections where designated on plans.

END OF SECTION

SPECIAL PROVISION

SP-15-7(170)320

SECTION 02742S

PROJECT SPECIFIC SURFACING REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Required PG Asphalt or emulsion.

B. Number of gyrations to use for Superpave Mix Design.

PART 2 PRODUCTS

2.1 MIXES

A. Hot Mix Asphalt (HMA): (Refer to bid item for size)

1. PG ___64-28__ Asphalt.

2. $N_{initial}$ _____8____ N_{design}____100_____ N_{final}___160_____

B. Open-Graded Surface Course:

1. PG ____64-28_____ Asphalt.

C. Chip Seal

1. Type of asphalt emulsion _____

PART 3 EXECUTION **Not used.**

END OF SECTION

August 15, 2002

SPECIAL PROVISION

SP-15-7(170)320

SECTION 02765S

PAVEMENT MARKING PAINT

Delete Section 02765 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish Acrylic Water Based pavement marking paint meeting Federal Specification TTP-1952 D. And refer to 2.1 for resin requirement.

B. Apply to asphaltic or concrete pavement as edge lines, center lines, broken lines, guide lines, symbols and other related markings.

C. Remove pavement markings.

1.2 REFERENCES

A. AASHTO M 247: Glass Beads Used in Traffic Paint.

B. ASTM D 562: Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using the Stormer-Type Viscometer.

C. ASTM D 711: No-Pick-Up Time of Traffic Paint.

D. ASTM D 2205: Selection of Tests for Traffic Paints

E. ASTM D 2743: Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography.

F. ASTM D 3723: Pigment Content of Water-Emulsion Paints

G. ASTM D 3960: Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

H. ASTM D 4451: Pigment Content of Paints

I. ASTM D 5381: X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders.

J. Federal Standards 595B, 37875, 33538, 11105 and TTP-1952 D.

1.3 ACCEPTANCE

A. UDOT ENGINEER:
1. Randomly samples pavement marking paint and submits to Central Chemistry Lab for acceptance.
2. Randomly generates the location of each test and removes all loose or excess beads from the line prior to testing.
3. Visually inspects each line to verify bead adhesion and compliance with specified line dimensions requirements.
4. Verifies that the paint and beads are being applied within specified tolerances a minimum of once each production day.
5. Verify quantities used by measuring both paint and bead tanks prior to and after application.

B. Repaint any line or symbol failing to meet bead adherence and dimensional requirements.

C. Repaint any line or symbol failing to meet the minimum application requirements for paint or beads.

PART 2 PRODUCTS

2.1 PAINT

A. Choose an approved pavement marking paint from the UDOT Research Division "Accepted Products Listing." Follow Federal Standards 595B, 37875, 33538, and 11105. Meet the following requirements for Acrylic Water Based Paint:

CIELAB (L*a*b*) D65/10E		
White	**Yellow**	**Red**
L* 91.9 to 95.6	L* 70.0 to 72.7	L* 31.4 to 33.4
a* -1.8 to -2.1	a* 22.5 to 24.8	a* 51.6 to 52.6
b* 3.8 to 2.2	b* 89.7 to 73.9	b* 34.1 to 35.1

1. No-track time: Not more than 5 minutes when tested according to ASTM D 711.
2. Volatile Organic Compounds Content: Less than 1.25 lbs/gal ASTM D 3960.
3. Free of lead, chromium, or other related heavy metals ASTM D 5381.
4. Pigment: Percent by weight: Acrylic Water Based minimum of 62.0 ± 2.0 ASTM D 3723.
5. Total Solids: Percent by weight: Acrylic Water Based minimum of 77.0 ASTM D 2205.
6. Acrylic water based paint must contain a minimum of 40 percent, by weight, 100 percent acrylic cross-linkable emulsion as determined by infrared analysis and other chemical analysis available to UDOT. ASTM D 2205
7. ASTM D 562, ASTM D 2743, ASTM D 4451 and ASTM D 5381: Tests used to verify paint samples meet "Accepted Products Listing".

2.2 GLASS SPHERE (BEADS) USED IN PAVEMENT MARKING PAINT

A. Specific Properties:
   1. Meet AASHTO M 247.
   2. Meet type II, uniform gradation.

PART 3 EXECUTION

3.1 PREPARATION

A. Line Control.
   1. Establish control points at 100 ft intervals on tangent and at 50 ft intervals on curves.
   2. Maintain the line within 2 inches of the established control points and mark the roadway between control points as needed.
      a. Remove paint that is not placed within tolerance of the established control points and replace at no expense to the Department. Refer to article 3.4.

B. Remove dirt, loose aggregate and other foreign material and follow manufacturer's recommendations for surface preparation.

3.2 APPLICATION

A. Pavement Marking Paint: Apply at the following rates:
   1. 4 inch Solid Line: From 270 to 350 ft/gal
   2. 4 inch Broken Line: From 1080 to 1400 ft/gal
   3. 8 inch Solid Line: From 135 to 175 ft/gal

B. Replace pavement markings that are less than 14 wet mils in thickness.

C. No payment for pavement markings placed in excess of 18 wet mils in thickness.

D. Painted Legends and Symbols 1 gallon per 100 square feet.

E. Glass Sphere (Beads): Apply a minimum of 8 lbs/gal of paint, the full length and width of line and pavement markings.

F. Begin striping operations no later than 24 hours after ordered by the Engineer.

G. At time of application apply lines and pavement markings only when the air and pavement temperature are:
   1. 50 degrees F and rising for Acrylic Water Based Paint.

H. Comply with Traffic Control Drawing TC16

3.3 CONTRACTOR QUALITY CONTROL

A. Application Rate: Verify that the paint and beads are being applied within specified tolerances prior to striping.

3.4 REMOVE PAVEMENT MARKINGS

A. Use one of these removal methods:
   1. High pressure water spray
   2. Sand blasting
   3. Shot blasting.

B. Use equipment specifically designed for removal of pavement marking material.

END OF SECTION

SPECIAL PROVISION
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SECTION 02776 M

CONCRETE SIDEWALK, MEDIAN FILLER, AND FLATWORK

PART 1 GENERAL

Add the following paragraph:

1.3 SUBMITTALS

A. Provide a copy of the supplier's recommended installation procedures to the ENGINEER a minimum of one week prior to installation of patterned concrete.

PART 2 PRODUCTS

2.1 PORTLAND CEMENT CONCRETE

Delete Line C of Paragraph 2.1 and replace with the following:

C. For median filler: High purity, chemically-inert, unfading, and alkali-fast synthetic pigment coloring material.

Add the following:

D. For median filler: Furnish a pattern stamp as shown in plans.

E. For median filler: Use colored concrete. Follow the supplier's specifications for additives. Use one of the following colors, or approved equal:
   1. Brick Red 160, Davis Colors
   2. Brick Red 110, Bay Ferrox, Iron Oxide Pigments

PART 3 EXECUTION

Delete Paragraph C of 3.1 and replace with the following:

C. Median Filler
   1. Provide a matching sample, 1 foot square, for the ENGINEER's approval before placing concrete.
   2. Thoroughly mix color pigment in the concrete before placing
   3. Protect newly placed concrete features adjacent to median filler from color bleeds and stains.
   4. Install premolded joint fillers around water meters, fire hydrants, utility poles, etc.

END OF SECTION

SPECIAL PROVISION

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SECTION 02831S

RETAINING WALL - ALTERNATE SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The plans include situation and layout drawings for the walls, which the Contractor will be required to select from the following wall systems, to be used for retaining walls indicated as the Contractor-selected alternative system on the project.

1. Option A - MSE Wall- Genesis Geogrid Retaining Wall (refer to Section 02836 S)
2. Option B - MSE Wall- MESA Retaining Wall (refer to Section 02836 S)
3. Option C - MSE Wall- KeySystem I Retaining Wall (refer to Section 02835 S)

B. Notify the Department in writing, on or before the preconstruction conference, which option will be used at each location. Selection must be made only from the options listed in paragraph 1.1.A, above.

C. Only one MSE wall system will be allowed for the Contractor-selected alternative system.

D. No changes to the wall types will be allowed following the preconstruction conference.

E. Design, Drawings, and Submittal Requirements for selected MSE Wall alternative system:

1. Design Requirements - The following design requirements are applicable for all MSE wall options.

a. Current AASHTO Specifications and Interim Specifications for Highway Bridges as modified by the following:

b. Design earthquake peak horizontal ground acceleration coefficient=0.3g.

c. The Contractor-selected Wall Company is responsible for all stability calculations, except global stability and bearing capacity (for which the Geotechnical Engineer is responsible).

d. Minimum service life of 75 years.

e. Department special provision sections 02832 S through 02837 S as appropriate for the selected wall system.

f. Provide corrosion protection by sacrificial steel sufficient for a corrosion rate of 0.5 mils/year per exposed surface after the 16 years of corrosion protection service allowed for the galvanized coating.

g. Use the following soil design properties:

SOIL PROPERTIES	WALL BACKFILL	RETAINED SOIL	FOUNDATION SOIL
Moist Density (pcf)	*	110	110
Friction Angle (deg)	*	30	30
Cohesion (psf)	*	0	0
	AASHTO LOAD GROUP 1	AASHTO LOAD GROUP II	
Foundation Soil Allowable Bearing Capacity (psf)	N/A	N/A	_1500

*The specific wall backfill characteristics are an integral part of the MSE wall design and shall be determined for the material by the selected Wall Company (with the wall backfill meeting the requirements of Section 02832 S)

2. Submittal Requirements and Review

Prepare and submit construction shop drawings addressing the following design items to the Engineer, sufficient for construction of the walls including all necessary plans, profiles, cross sections, quantities, and details. The shop drawings shall be prepared and signed by a licensed professional engineer.

a. Cast-in-place concrete coping/cap to the facing panels/blocks to be aesthetically pleasing, and to adequately support any fence and/or barrier.

b. Provisions for facilities which penetrate the wall face or soil reinforcing elements (such as but not limited to drainage catch basins, piping, foundation elements, guard-rail posts, and other buried facilities).

c. Surface and subsurface drainage details including end treatment details sufficient for protection of the wall system from erosion and excessive hydrostatic loading. Surface drainage at the ends of the walls shall be directed to drainage catch basins. Provide design details for the drainage to the catch basins.

d . Proposed architectural treatment detail for wall facing elements, and proposed color of concrete.

e. Design calculations sufficient for review to determine that the walls have been designed in accordance with the required criteria. The design calculations shall be prepared and signed by a registered professional engineer.

3. The Department will require 6 weeks after the date received for review of submittals. Written acceptance of MSE wall submittals will be provided. Construction of the wall shall not begin until written acceptance has been provided. If the Department determines that MSE wall submittals are not sufficient, re-submittals will be required and the Department will require 6 weeks after the date received for review of the re-submittals.

1.2 RELATED WORK

A. Section 02832 S: Select Material for MSE Walls

B. Section 02835 S: MSE Walls Using Modular Block Units and Metal Reinforcing Elements

C. Section 02836 S: MSE Walls Using Modular Blocks and Geogrid Reinforcing Elements

PART 2 PRODUCTS

2.1 MATERIALS

A. All materials are as required in Sections 02832 S through 02837 S as appropriate for the selected wall system.

PART 3 EXECUTION

3.1 INSTALLATION

A. All installation is as required in Sections 02832 S through 02837 S as appropriate for the selected wall system.

END OF SECTION

SPECIAL PROVISION

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SECTION 02832 S

SELECT MATERIAL FOR MSE WALLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Select Material for MSE walls and placement procedures.

1.2 RELATED SECTIONS

A. Section 02324: Compaction.

B. Section 02831 S: Retaining Wall - Alternate Systems.

C. Section 02833 S: MSE Walls Using Concrete Facing Panels and Metal Reinforcing Elements.

D. Section 02834 S: MSE Walls Using Concrete Facing Panels and Geogrid Reinforcing Elements.

E. Section 02835 S: MSE Walls Using Modular Block Units and Metal Reinforcing Elements.

F. Section 02836 S: MSE Walls Using Modular Block Units and Geogrid Reinforcing Elements.

G. Section 02837 S: Two-Stage MSE Walls Using Concrete Facing Panels and Metal Reinforcing Elements.

1.3 DEFINITIONS

A. Select Material for MSE Walls: Fill material meeting requirements of this Section.

1.4 QUALITY ASSURANCE

A. Remove products found defective after installation and install acceptable products at no additional cost to the Department.

PART 2 PRODUCTS

2.1 SELECT MATERIAL FOR MSE WALLS

A. Select Material used for MSE wall backfill shall be free from frozen, organic and otherwise deleterious materials and shall conform to the following gradation limits as determined by AASHTO T-27:

Table 1

Gradation for Select Material for MSE Walls	
Sieve Size	Percent passing
4 inch*	100
No. 40	0 - 60
No. 200	0 –15

* Except where geogrid reinforcement is used, in which case 100 percent shall pass the ¾-inch sieve.

B. The Plasticity Index (PI), as determined by AASHTO T-90 shall not exceed 6.

C. The material shall exhibit an internal friction angle of not less than 34 degrees as determined by the standard direct shear test, AASHTO T-236, utilizing a sample of the material compacted to 95 percent of AASHTO T-99, Methods C or D (with oversize correction, as outlined in Note 7), at optimum moisture content. Internal friction angle testing is not required for backfill materials that have at least 80 percent of the material greater than or equal to the 3/4 inch size.

D. The material shall be substantially free of shale or other soft, poor durability particles. The material shall have a sodium sulfate soundness loss of less than 15 percent after 5 cycles, determined in accordance with AASHTO T-104.

E. The material shall conform to the following electrochemical requirements.

Table 2

Electrochemical Requirements		
Property	Requirement	Test Method
Resistivity	Minimum 3000 ohm-cm, at 100% saturation	AASHTO T-288
pH	Acceptable Range: 5-10	AASHTO T-289
Chlorides	**Maximum 100 ppm**	AASHTO T-291
Sulfates	Maximum 200 ppm	AASHTO T-290

F. Furnish the IQF with a Certificate of Compliance certifying that the select material complies with this section of the specifications. This certificate must be made by an AASHTO-certified testing lab.

G. Furnish the IQF with a copy of all test results performed by the Design-Builder, which are necessary to assure compliance.

PART 3 EXECUTION

3.1 INSTALLATION

A. Excavation and Foundation Preparation:

1. Excavate and grade foundation area to the lines and grades shown on the drawings, or as directed by the Engineer.
2. The width of excavation shall be equal to or exceeding the length of soil reinforcing elements.
3. Prior to the wall construction, compact the foundation using a minimum of 3 passes of a light-weight, steel, smooth-drum vibratory roller, or as otherwise determined by the Engineer.
4. All foundation soils found to be unsuitable shall be removed and replaced with Select Material, placed and compacted as described in this Section, or with other suitable material determined by the Engineer.

B. MSE Wall:

1. Placement of Select Material for MSE wall backfill shall follow erection of each course of panels. Backfill at the front of the wall shall be completed prior to backfilling more than 4 feet above the bottom of the lowermost facing element.
2. Place backfill in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing panels.
3. Wall materials which become damaged or disturbed during backfill placement shall be either removed and replaced, or corrected as directed by the Engineer, at the Contractor's sole expense.
4. Backfill placed which does not meet the requirements of this specification shall be removed and replaced, or otherwise corrected as directed by the Engineer, at the Contractor's sole expense.
5. The moisture content of the backfill prior to and during compaction shall be uniform throughout each layer.
6. The optimum moisture content will be determined in accordance with AASHTO, Method C or D (with oversize correction, as outlined in Note 7 of T-99).
7. Backfill moisture content at placement shall not be greater than the optimum moisture content, or less than 4 percentage points below optimum.
8. Backfill with a placement moisture content in excess of the optimum moisture content shall be removed. The wet Select Material backfill may be reused, provided it is aerated or otherwise reworked until the moisture content is uniform and acceptable throughout the entire lift.
9. When placing backfill over the soil reinforcement, begin placement 6 to 10 feet from the wall face and proceed away from the wall.
10. Maximum lift thickness shall not exceed 10 inches (loose). Decrease the lift thickness as necessary to obtain the specified density.
11. Compact backfill to at least 95 percent of the maximum density, Method C or D (with oversized correction, outlined in Note 7 of T-99).
12. If 30 percent or more of the Select Material is greater than 3/4 in size, AASHTO T-99 is not applicable. For such a material, the acceptable criterion for control of compaction shall be either a minimum of 70 percent relative density of the material as determined by a method specification (based on a test compaction section, which defines the type of equipment, lift thickness, number of passes of the specified equipment, and placement moisture content).

13. Each layer of backfill shall be placed and compacted in a level manner before placing subsequent backfill layers.
14. Do not use sheeps-foot or other grid-type rollers for compacting material within the limits of the soil reinforcement.
15. Prior to placement of the reinforcement, the backfill elevation, after compaction, shall be 2 inches above the reinforcement connection from a point approximately 1 foot behind the back face of the wall facings (panels, block units, etc.) to the end of the reinforcing, unless otherwise shown on the plans.
16. Compaction within 3 feet of the back face of the wall facing units and within 2 feet of any obstructions, shall be achieved by at least three passes of a suitable lightweight (hand-held or hand-guided) mechanical tamper, roller or vibratory compactor. The maximum loose lift thickness within this zone shall be between 6 inches and 8 inches, as warranted by the type of compaction equipment actually used; but no soil density tests need be taken within this area. Exercise care in the compaction process to avoid misalignment of the panels.
17. Rubber-tired equipment may pass over the reinforcement at slow speeds (less than 5 mph). Avoid sudden braking and sharp turning.
18. Soil reinforcing elements shall be placed normal to face of wall in plan view; or may be skewed, minimizing the skew angle to avoid obstructions, but no more than 25 degrees unless approved by the wall company.
19. The top level of soil reinforcement shall be placed parallel to the top of the facing unit a distance below the top of the wall as shown on the plans. The top level of soil reinforcement shall also be placed a minimum of 3 inches below the bottom of the barrier slab lip or the bottom of the concrete gutter behind coping.
20. At the end of each day's operation, slope the backfill away from the wall to direct runoff of rainwater away from the wall face. Do not allow surface runoff from adjacent areas to enter the wall construction site.
21. Slope the top of the backfill along the wall such that the top reinforcement layer is covered with a minimum of 16 inches of Select Material.

END OF SECTION

SPECIAL PROVISION

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SECTION 02835 S

MSE WALLS USING MODULAR BLOCK UNITS AND METAL REINFORCING ELEMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish material and construct MSE walls using a wall system employing modular block units for the wall face, and metal reinforcing elements.

B. Make arrangements to purchase the modular block wall units, metal reinforcement, joint filler, and all necessary attachments from the selected Wall Company.

1.2 RELATED SECTIONS

A. Section 02831 S: Retaining Wall- Alternate Systems

B. Section 02832 S: Select Material for MSE Walls

C. Section 03055: Portland Cement Concrete

C. Section 03211: Reinforcing Steel and Welded Wire

E. Section 03310: Structural Concrete

1.3 SUBMITTALS

A. Submit sample of the texture for approval by the Department.

B. Submit to the Department for approval a minimum of 3 color samples of proposed segmental concrete unit colors, matched to colors of local features or as otherwise indicated, at least 4 weeks prior to beginning manufacture of the block units.

C. Submit verification that the calculation of coefficient of lateral earth pressure is a factor of safety of 2.5 at the top of the wall as required by AASHTO. Also submit verification that the allowable tensile load for the soil reinforcements is 0.48Fy as required by AASHTO for steel grid-type reinforcement.

D. Provide verification that special design of the upper 10 feet of wall has been completed at locations where the design earthquake peak horizontal ground acceleration coefficient is 0.30g or greater.

E. Provide design details which protect the reinforcement connections from corrosion due to salt spray.

F. Provide all other submittals required in Section 02831 S.

G. Do not start work on any wall until working drawings have been reviewed by the Engineer. The Engineer's review of the Contractor's drawings does not relieve the Contractor of any responsibility under the contract for the successful completion of the work.

PART 2 PRODUCTS

2.1 CONCRETE MODULAR BLOCK UNITS

A. Provide drycast concrete wall units having a minimum net 28-day compressive strength of 3000 psi, and a maximum moisture absorption of 6.0 lb/ft^3, both in accordance with ASTM C-140.

B. Concrete block shall be manufactured using a combination of cement, aggregates, admixtures, and other constituents which have been verified to be compatible with each other and with the environment in which the block is required to perform, including sulfate soils and/or groundwater.

C. Cement shall meet the requirements of Section 03055.

D. Pozzolan shall meet the requirements of Section 03055.

E. Blended cement shall meet the requirements of Section 03055.

F. Chemical admixtures shall meet the requirements of Section 03055.

G. Provide coating to block faces with sealer to minimize chloride intrusion into units in accordance with Article 7.3.1.4 Division II of AASHTO 1999 *Interim Standard Specifications for Highway Bridges*.

H. Normal weight aggregates shall meet the requirements of Section 03055.

I. Lightweight aggregates, if used and approved, shall meet the additional requirements of ASTM C-331.

J. Provide block units with dimensions in conformance with the wall manufacturer's standard. Permissible variations are plus 1/8 inch and minus 1/16 inch.

K. Provide block units having angled sides capable of producing concave and convex alignment curves with a minimum radius of 3.3 feet.

L. Provide block units having a polymeric efflorescence control admixture.

M. Finish and Appearance: All units shall be sound and free from cracks or other defects that would interfere with the proper placement of the unit, or significantly impair the strength or permanence of the construction. Minor cracks incidental to the usual method of manufacture or minor chipping resulting from shipment and delivery are not grounds for rejection. The face or faces of units that are to be exposed shall be free of chips, cracks or other imperfections when viewed from a distance of 33 feet under diffused lighting. Up to five percent of a shipment may contain slight cracks or small chips not longer than 1 inch.

N. Notify the Engineer in writing at least 72 hours before beginning the casting of concrete modular block units.

O. Sampling and Testing: Acceptance of the concrete units with respect to compressive strength will be determined on a lot basis. The lot will be randomly sampled in accordance with ASTM Specification C 140. Compressive strength test specimens shall be cored or shall conform to the saw-cut coupons provisions of Section 5.2.4 of ASTM Specification C 140.

1. The rate of block sampling shall be:

Table 1

Lot Size	Samples
0-10,000	6 units
10,000-100,000	12 units
Greater than 100,000	6 units per 50,000

2. Provide additional samples if required by the Engineer.

P. Rejection: Units shall be rejected because of failure to meet any of the requirements specified above. In addition, any or all of the following defects will be sufficient cause for rejection:
   1. Defects that indicate imperfect molding.
   2. Defects indicating honeycomb or open-texture concrete.
   3. Cracked or severely chipped units.
   3. Color variation on exposed face(s) of unit due to excess form oil or other reasons.

2.2 LEVELING PAD CONCRETE

A. Use Class A or B concrete as per Section 03055.

2.3 MODULAR BLOCK-UNIT FILL

A. Use free-draining crushed stone, predominantly 3/8 to 3/4 inch, with no more than 5 percent passing the No. 200 sieve, within the modular block units requiring fill material.

2.4 REINFORCING STRIPS

A Hot rolled from steel bars, galvanize coated 3.4 mils thick, meeting minimum requirements of ASTM D1784, Grade 65; AASHTO M-111 and ASTM A-123.

B. All reinforcing strips shall be the specified size (See 02831 S, 1.1E-1) and free from defects.

2.5 REINFORCED WELDED WIRE MESH AND LOOP INBEDS

A. Meeting minimum requirements of AASHTO M-32 and AASHTO M-55; and be galvanize coated 3.4 mils thick as per AASHTO M-111 (ASTM A-123).

2.6 FIBERGLASS AND STEEL PINS

A. Provide ½ inch diameter fiberglass connecting pins, where used, having a minimum flexural strength of 128 ksi and short beam shear of 6.5 ksi.

B. Provide steel connecting pins galvanized coated 3.4 mils thick, meeting Wall Company requirements.

2.7 OTHER FASTENERS

A. Fasteners to wingwalls and abutment wall, if required, shall be provided by the selected Wall Company.

2.8 DAMAGED GALVANIZATION

A. As an alternative to replacement, any reinforcing steel, reinforcing strips, wire mesh or fasteners that has damaged galvanization, spray with zinc paint covering the entire area that has been damaged.

2.9 GEOTEXTILE

A. Horizontal and vertical joints between block units shall be covered by a geotextile of the type and grade as recommended by the Wall Company.

2.10 ADHESIVE

A. Per Wall Company's standard.

2.11 SELECT MATERIAL FOR REINFORCED EARTH BACKFILL

A. See Special Provision Section 02832 S- Select Material for MSE Walls.

PART 3 EXECUTION

3.1 GENERAL

A. Arrange for a qualified representative (minimum 5 years experience with MSE wall design and construction) from the selected Wall Company to be directly involved and provide technical assistance during all phases of construction of the entire wall(s), including being at the project site during all phases of wall construction. The Wall Company shall provide assurance that the completed wall(s) meet all Department and Wall Company specifications. Note: Where the Department's and the Wall Company's specifications differ, the stricter of the two shall be applied. The representative is responsible for training the Contractor and/or Department inspectors in proper quality control for construction of the walls. The Wall Company representative shall report any irregularities to the Engineer.

B. Haul, store and ship wall materials so as to minimize the potential of producing any type of defects.

C. Perform excavation and foundation preparation (including removal of unsuitable soils) as described in Section 02832 S.

D. Construct the wall system in accordance with the approved plans, this specification, and the Wall Company's recommendations and construction manual.

3.2 LEVELING PAD

A. Prepare the subgrade soils and/or fill so as to cast the leveling pad to the design elevations shown on the drawings, to ensure complete contact of the retaining wall units with the base.

B. Place cast-in-place concrete leveling pad upon undisturbed in-situ soils, or upon properly placed and compacted fill as per Section 02832 S. Place leveling pad to a minimum thickness of 6 inches.

C. Allow leveling pad to cure for at least 12 hours prior to placing concrete panels.

D. Use rubber, wood, or metal shims as necessary to make final adjustments to the wall panel to facilitate level placement of the panel.

3.3 MODULAR BLOCK UNIT INSTALLATION

A. Place wall backfill as described in Section 02832 S.

B. Place the first course of modular block units on the leveling pad. Check the wall units for level and alignment. The first course is the most important to ensure accurate and acceptable results.

C. Ensure block units are in full contact with the leveling pad.

D. Install connecting devices in block units as required by the Wall Company.

E. For block units requiring fill material, fill all voids in block units with modular block unit fill. Tamp fill. Ensure each wall course is completely filled, backfilled, and compacted prior to proceeding to the next wall course.

F. Where connecting pins are used, lay up each course ensuring connecting pins protrude into adjoining courses above a minimum of 1 inch.

G. Pull each block unit forward, away from the embankment, against connecting pins in the previous course and backfill as the course is completed. Repeat procedure to the extent of the wall height.

H. As appropriate where the wall changes elevation, the units can be stepped with grade or turned into the embankment with a convex return end. Provide appropriate buried units on the compacted leveling pad in the area of the convex return end.

I. Horizontal tolerance shall be +/- 1½ inches in 30 feet (3 inches overall). Vertical tolerance shall be 3/4 inch when measured along a 10 foot straight edge. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed 1 ½ inch per 20 feet of wall height. Levelness tolerance shall be 5/8 inch per 10 feet.

J. All joints shall be uniform. During construction the maximum allowable offset in any block joint shall be 1/4 inch. Joint width shall be 1/2 inch maximum and 1/8 inch minimum.

3.4 STEEL SOIL REINFORCEMENT INSTALLATION

A. Lay the steel reinforcement horizontally on the compacted backfill at the proper elevations as designed.

B. Connect steel reinforcement to the block units as required by Wall Company.

C. Pull the reinforcement taut to eliminate any slack; then secure the back edge of the reinforcement before and during backfilling and compaction.

D. Assuming reinforcement layers must be partially or fully served in the location of an obstruction (such as a caisson foundation, guardrail post, catch basin, drop inlet, or culvert), in the wall soil reinforcement zone, reinforcement design shall be modified using one of the following three alternatives:

1. Design the surrounding reinforcement layers to carry the additional load which would have been carried by the severed reinforcement.
2. Place a structural frame around the obstruction which is capable of transferring loads from the reinforcements on one side of the obstruction to reinforcements on the other side of the obstruction.
3. If the soil reinforcement consists of discrete strip or bar mats rather than continuous sheets, splay the reinforcements around the obstruction.

E. Soil reinforcement strips shall generally be placed normal to the face of the wall in plan view. However, where required to splay the strips around obstructions, the strips shall be skewed (minimizing the skew angle), but no more than 15 degrees unless approved by the Wall Company. However, in no case shall the maximum horizontal spacing between longitudinal reinforcing straps be greater than 7 feet.

3.5 WALL CAP INSTALLATION

A. Provide a permanent connection between the wall cap units and the top course of the wall units. Use an approved construction adhesive or epoxy for the connection.

3.6 SAMPLING AND TESTING

A. Certificates of Compliance. Furnish to the Engineer copies of the certificate of compliance for materials and the results of any tests performed by the Wall Company on the materials.

B. Select Material Density Testing. The Engineer will make at least one density determination per lift for each 100 feet of retaining wall. The tests will be made at random locations; but will be at least 3 feet from back of wall.

C. Concrete Testing. Strength, slump, air, and yield tests will be conducted in accordance with Section 03055.

3.7 BLOCK UNITS ACCEPTANCE

A. Meet 28-day compression test. Block units which meet 75 percent of 28-day strength within 7 days are acceptable for placement in the wall.

B. No block units shall be placed in the wall unit until it has been cured for a minimum of 7 days.

C. All block units shall be visually free of defects.

D. Submit certificate of compliance to the Engineer.

END OF SECTION

SPECIAL PROVISION

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SECTION 02836 S

MSE WALLS USING MODULAR BLOCK UNITS AND GEOGRID REINFORCING ELEMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish material and construct MSE walls using a wall system employing modular block units for the wall face, and geogrid reinforcing elements.

B. Make arrangements to purchase the modular block wall units, geogrid reinforcement, joint filler, and all necessary attachments from the selected Wall Company.

1.2 RELATED SECTIONS

A. Section 02831 S: Retaining Wall- Alternate Systems

B. Section 02832 S: Select Material for MSE Walls

C. Section 03055: Portland Cement Concrete

D. Section 03211: Reinforcing Steel and Welded Wire

E. Section 03310: Structural Concrete

1.3 SUBMITTALS

A. Submit sample of the texture for approval by the Department.

B. Submit to the Department for approval a minimum of 3 color samples of proposed segmental concrete unit colors, matched to colors of local features or as otherwise indicated, at least 4 weeks prior to beginning manufacture of the block units.

C. Submit verification that the calculation of coefficient of lateral earth pressure is a factor of safety of 2.5 at the top of the wall as required by AASHTO.

D. Provide verification that special design of the upper 10 feet of wall has been completed at locations where the design earthquake peak horizontal ground acceleration coefficient is 0.30g or greater.

E. Provide all other submittals required in Section 02831 S.

F. Do not start work on any wall until working drawings have been reviewed by the Engineer. The Engineer's review of the Contractor's drawings does not relieve the Contractor of any responsibility under the contract for the successful completion of the work.

PART 2 PRODUCTS

2.1 CONCRETE MODULAR BLOCK UNITS

A. Provide dry-cast concrete wall units having a minimum net 28-day compressive strength of 3000 psi. The maximum moisture absorption is 10 lb/ft^3

B. Concrete block shall be manufactured using a combination of cement, aggregates, admixtures, and other constituents which have been verified to be compatible with each other and with the environment in which the block is required to perform, including sulfate soils and/or groundwater.

C. Cement shall meet the requirements of Section 03055.

D. Pozzolan shall meet the requirements of Section 03055.

E. Blended cement shall meet the requirements of Section 03055.

F. Chemical admixtures shall meet the requirements of Section 03055.

G. Provide coating to block faces with sealer to minimize chloride intrusion into units in accordance with Article 7.3.1.4 Division II of AASHTO 1999 *Interim Standard Specifications for Highway Bridges*.

H. Normal weight aggregates shall meet the requirements of Section 03055.

I. Lightweight aggregates, if used and approved, shall meet the requirements of ASTM C331.

J. Provide block units with dimensions in conformance with the Wall Company's standard. Permissible variations are plus 1/8 inch and minus 1/16 inch.

K. Provide block units having angled sides capable of producing concave and convex alignment curves with a minimum radius of 3.3 feet.

L. Provide block units having a polymeric efflorescence control admixture.

M. Finish and Appearance: All units shall be sound and free from cracks or other defects that would interfere with the proper placement of the unit, or significantly impair the strength or permanence of the construction. Minor cracks incidental to the usual method of manufacture or minor chipping resulting from shipment and delivery are not grounds for rejection. The face or faces of units that are to be exposed shall be free of chips, cracks or other imperfections when viewed from a distance of 33 feet under diffused lighting. Up to five percent of a shipment may contain slight cracks or small chips not longer than 1 inch.

N. Notify the Engineer in writing at least 72 hours before beginning the casting of concrete modular block units.

O. Sampling and Testing: Acceptance of the concrete units with respect to compressive strength will be determined on a lot basis. The lot will be randomly sampled in accordance with ASTM Specification C 140. Compressive strength test specimens shall be cored or shall conform to the saw-cut coupons provisions of Section 5.2.4 of ASTM Specification C 140.

1. The rate of block sampling shall be:

Table 1

Lot Size	Samples
0-10,000	6 units
10,000-100,000	12 units
Greater than 100,000	6 units per 50,000

2. Provide additional samples if required by the Engineer.

P. Rejection: Units shall be rejected because of failure to meet any of the requirements specified above. In addition, any or all of the following defects shall be sufficient cause for rejection:

1. Defects that indicate imperfect molding;
   a. Defects indicating honeycomb or open-texture concrete.
   b. Cracked or severely chipped units.
   c. Color variation on exposed face(s) of unit due to excess form oil or other reasons.

2.2 LEVELING PAD CONCRETE

A. Use Class A or B concrete as per Section 03055.

2.3 MODULAR BLOCK-UNIT FILL

A. Use free-draining crushed stone, predominantly 3/8 to 3/4 inch, with no more than 5 percent passing the No 200 sieve, within the modular block units requiring fill material.

2.4 GEOGRID

A. The geogrid shall consist of a regular grid network of integrally connected, discontinuous, select high-density polyethylene or polypropylene resin polymer tensile elements. Aperture geometry shall be sufficient to permit significant mechanical interlock with the surrounding soil and/or rock. The geogrid structure shall be dimensionally stable and be able to retain its geometry under manufacture, transport, and installation.

B. Provide junction strength, minimum GRI-GG2 of 90 percent of ultimate strength.

C. Provide maximum strain of 10 percent for tension creep test, 10,000 hours for 75-year design life, GRI-GG3.

D. Provide ultimate strength, minimum GRI-GR1 as shown on plans.

E. All soil reinforcement and attachment devices shall be carefully inspected to ensure they are true to size and free from defects that may impair their strength and durability.

F. Prevent mud, wet concrete, epoxy and similar contaminants from coming in contact with and affixing to the soil reinforcement products.

G. Store soil reinforcement products as recommended by the Wall Company.

2.5 FIBERGLASS PINS

A. Provide ½ inch diameter fiberglass connecting pins, where used, having a minimum flexural strength of 128 ksi and short beam shear of 6.5 ksi.

2.6 OTHER FASTENERS

A. Fasteners to wingwalls and abutment wall, if required, shall be provided by the selected Wall Company.

2.7 GEOTEXTILE

A. Horizontal and vertical joints between block units shall be covered by a geotextile of the type and grade as recommended by the Wall Company.

2.8 ADHESIVE

A. Per Wall Company's standard.

2.9 SELECT MATERIAL FOR WALL BACKFILL

A. See Special Provision Section 02832 S- Select Material for MSE Walls.

PART 3 EXECUTION

3.1 GENERAL

A. Arrange for a qualified representative (minimum 5 years experience with MSE wall design and construction) from the selected Wall Company to be directly involved and provide technical assistance during all phases of construction of the entire wall(s), including being at the project site during all phases of wall construction. The Wall Company shall provide assurance that the completed wall(s) meet all Department and Wall Company specifications. Note: Where the Department's and the Wall Company's specifications differ, the stricter of the two shall be applied. The representative is responsible for training the Contractor and/or Department inspectors in proper quality control for construction of the walls. The Wall Company representative shall report any irregularities to the Engineer.

B. Haul, store and ship wall materials so as to minimize the potential of producing any type of defects.

C. Perform excavation and foundation preparation (including removal of unsuitable s oils) as described in Section 02832 S.

D. Construct the wall system in accordance with the approved plans, this specification, and the Wall Company's recommendations and construction manual.

3.2 LEVELING PAD

A. Prepare the subgrade soils and/or fill so as to cast the leveling pad to the design elevations shown on the drawings, to ensure complete contact of the retaining wall units with the base.

B. Place cast-in-place concrete leveling pad upon undisturbed in-situ soils, or upon properly placed and compacted fill as per Section 02832 S. Place leveling pad to a minimum thickness of 6 inches.

C. Allow leveling pad to cure for at least 12 hours prior to placing concrete panels.

D. Use rubber, wood, or metal shims as necessary to make final adjustments to the wall panel to facilitate level placement of the panel.

3.3 MODULAR BLOCK UNIT INSTALLATION

A. Place wall backfill as described in Section 02832 S.

B. Place the first course of modular block units on the leveling pad. Check the wall units for level and alignment. The first course is the most important to ensure accurate and acceptable results.

C. Ensure block units are in full contact with the leveling pad.

D. Install connecting devices in block units as required by the Wall Company.

E. For block units requiring fill material, fill all voids in block units with modular block unit fill. Tamp fill. Ensure each wall course is completely filled, backfilled, and compacted prior to proceeding to the next wall course.

F. Where connecting pins are used, lay up each course ensuring connecting pins protrude into adjoining courses above a minimum of 1 inch.

G. Pull each block unit forward, away from the embankment, against connecting devices in the previous course and backfill as the course is completed. Repeat procedure to the extent of the wall height.

H. As appropriate where the wall changes elevation, the units can be stepped with grade or turned into the embankment with a convex return end. Provide appropriate buried units on the compacted leveling pad in the area of the convex return end.

I. Horizontal tolerance shall be +/- 1½ inches in 30 feet (3 inches overall). Vertical tolerance shall be 3/4 inch when measured along a 10-foot straight edge. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed 1 ½ inch per 20 feet of wall height. Levelness tolerance shall be 5/8 inch per 10 feet.

J. All joints shall be uniform. During construction the maximum allowable offset in any block joint shall be 1/4 inch. Joint width shall be 1/2 inch maximum and 1/8 inch minimum.

3.4 GEOGRID INSTALLATION

A. Verify the correct orientation (roll direction) of the geogrid.

B. Lay the geogrid soil reinforcement horizontally on the compacted backfill at the proper elevations as designed.

C. Connect geogrid to the concrete wall units as required by Wall Company.

D. Pull the geogrid taut to eliminate loose folds and removing slack in the geogrid at the wall unit connections, pretension the geogrid, and then stake or otherwise secure the back edge of the geogrid before and during backfill and compaction.

E. Follow the Wall Company's guidelines relative to overlap requirements of uniaxial and biaxial geogrids.

F. Assuming reinforcement layers must be partially or fully served in the location of an obstruction (such as a caisson foundation, guardrail post, catch basin, drop inlet, or culvert), in the wall soil reinforcement zone, reinforcement design shall be modified using one of the following two alternatives:

1. Design the surrounding reinforcement layers to carry the additional load which would have been carried by the severed reinforcement.
2. Place a structural frame around the obstruction which is capable of transferring loads from the reinforcements on one side of the obstruction to reinforcements on the other side of the obstruction.

3.5 WALL CAP INSTALLATION

A. Provide a permanent connection between the wall cap units and the top course of the wall units. Use an approved construction adhesive or epoxy for the connection.

3.6 SAMPLING AND TESTING

A. Certificates of Compliance. Furnish to the Engineer copies of the certificate of compliance for materials and the results of any tests run on them from the Wall Company on the materials.

B. Select Material Density Testing. The Engineer will make at least one density determination per lift for each 100 feet of retaining wall. The tests will be made at random locations; but will be at least 3 feet from back of wall.

C. Concrete Testing. Strength, slump, air, and yield tests will be conducted in accordance with Section 03055.

3.8 BLOCK UNITS ACCEPTANCE

A. Meet 28-day compression test. Block units which meet 75 percent of 28-day strength within 7 days are acceptable for placement in the wall.

B. No block units shall be placed in the wall unit until it has been cured for a minimum of 7 days.

C. All block units shall be visually free of defects.

D. Submit certificate of compliance to the Engineer.

END OF SECTION

May 2, 2003

SPECIAL PROVISION

SP-15-7(170)320

SECTION 02892M

TRAFFIC SIGNAL

Delete Section 3.5 A. Conductors: And replace with the following:

A. Conductors:

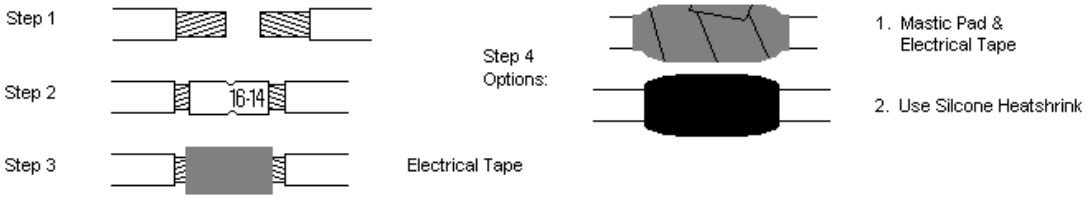
1. Clean and dry the inside of the conduit before installing conductors.
2. Install grounding conductor in all power circuit conduits.
3. Use approved lubricants when pulling conductors in conduit.
4. Tape the ends of unused conductors.
5. Use conductors that are color coded as specified. Meet IMSA 20-1.

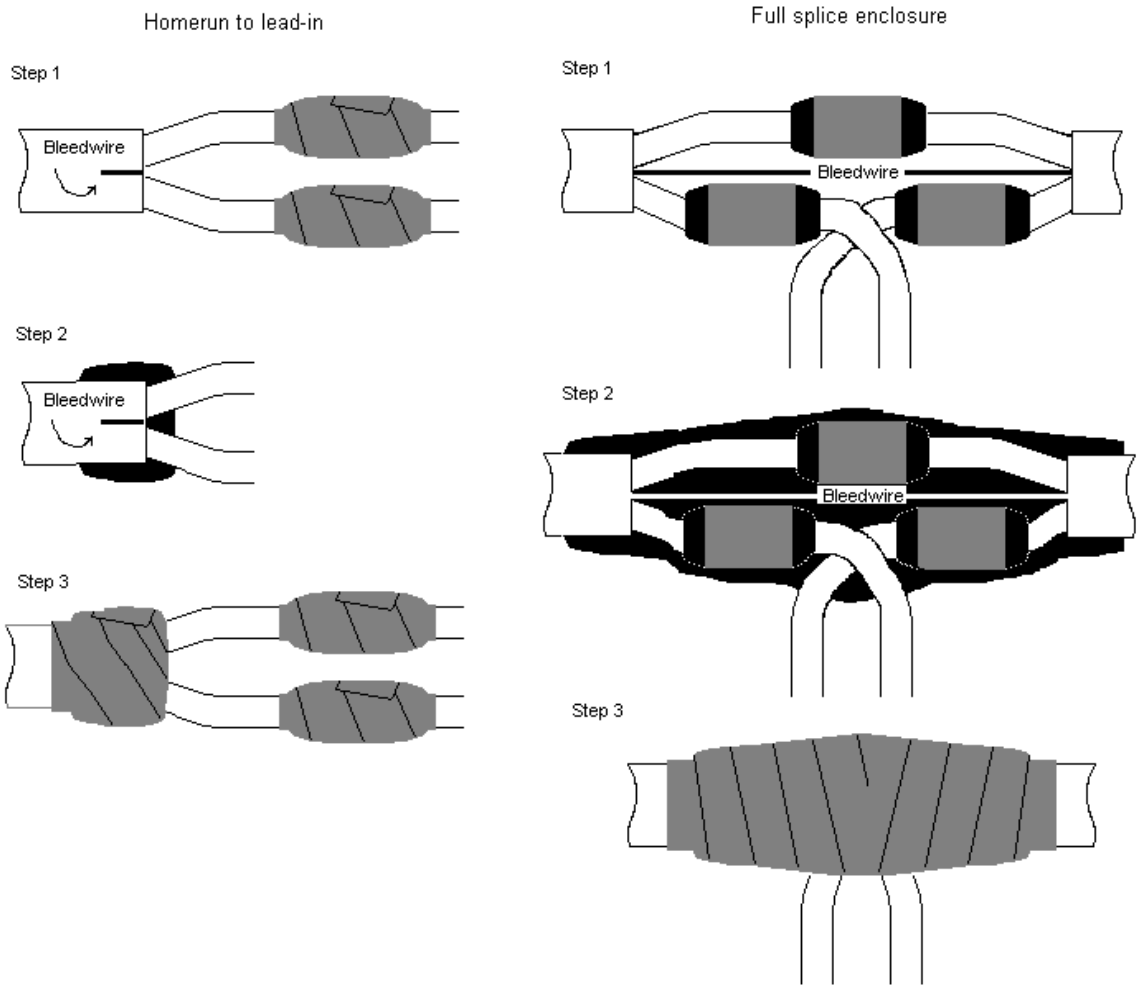
Delete Section 3.5 E. Wire Splicing and replace with the following.

E. Wire splicing:

1. Splice wires only in detection circuits where the wire type changes in the junction boxes.
2. Mechanically secure and solder, individually insulate, and water seal all splices. Cover with silicon based heat shrink or mastic rubber pads and over wrap with vinyl electric tape.
3. Splicing procedures showing all steps required for each splice. Refer to the following detail sheet explaining procedures.

Detail sheet for splicing wire & cable:





END OF SECTION